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Mineral Resource Report 91

Part 1

1985



# COAL RESOURCES OF FAYETTE COUNTY, PENNSYLVANIA

## PART 1. COAL CROP LINES, MINED-OUT AREAS, AND STRUCTURE CONTOURS

Compiled by  
James R. Shaulis

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M91  
Pt. 1

COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL RESOURCES  
OFFICE OF RESOURCES MANAGEMENT  
BUREAU OF  
TOPOGRAPHIC AND GEOLOGIC SURVEY  
Arthur A. Socolow, State Geologist

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Mineral Resource Report 91  
Part 1

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# COAL RESOURCES OF FAYETTE COUNTY, PENNSYLVANIA

## PART 1. COAL CROP LINES, MINED-OUT AREAS, AND STRUCTURE CONTOURS

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Compiled by James R. Shaulis  
Pennsylvania Geological Survey

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PENNSYLVANIA GEOLOGICAL SURVEY  
FOURTH SERIES  
HARRISBURG

1985

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Shaulis, James R.  
Coal resources of Fayette  
County, Pennsylvania

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## CONTENTS

	<i>Page</i>
Introduction .....	1
References .....	2
Quadrangle maps .....	5
Brandonville .....	5
Crop line and mined-out area of the Brookville coal .....	5
Coal crop lines and structure contours .....	6
Brownfield .....	7
Crop line and mined-out area of the Upper Freeport coal .....	7
Crop line and mined-out areas of the Pittsburgh coal .....	8
Crop line and mined-out area of the Redstone coal .....	9
Crop line and mined-out areas of the Sewickley coal .....	10
Coal crop lines and structure contours .....	11
Bruceton Mills .....	12
Coal crop lines and structure contours .....	12
California .....	13
Crop line and mined-out areas of the Pittsburgh coal .....	13
Coal crop lines and structure contours .....	14
Carmichaels .....	15
Crop line and mined-out area of the Pittsburgh coal .....	15
Crop line and mined-out areas of the Waynesburg coal .....	16
Coal crop lines and structure contours .....	17
Confluence .....	18
Coal crop lines and structure contours .....	18
Connellsville .....	19
Crop line and mined-out areas of the Clarion coal .....	19
Crop line and mined-out areas of the Pittsburgh coal .....	20
Coal crop lines and structure contours .....	21
Dawson .....	22
Crop line and mined-out areas of the Upper Freeport coal .....	22
Crop line and mined-out areas of the Lower Bakerstown coal .....	23
Crop line and mined-out areas of the Pittsburgh coal .....	24
Coal crop lines and structure contours .....	25
Donegal .....	26
Crop line and mined-out areas of the Clarion coal .....	26
Crop line and mined-out areas of the Middle Kittanning coal .....	27
Crop line and mined-out areas of the Upper Kittanning coal .....	28
Crop line and mined-out areas of the Lower Freeport coal .....	29
Crop line and mined-out areas of the Upper Freeport coal .....	30
Coal crop lines and structure contours .....	31
Donora .....	32
Crop line and mined-out area of the Pittsburgh coal .....	32
Coal crop lines and structure contours .....	33
Fayette City .....	34
Crop line and mined-out areas of the Pittsburgh coal .....	34
Coal crop lines and structure contours .....	35

	<i>Page</i>
Fort Necessity .....	36
Crop line and mined-out areas of the Lower Kittanning coal .....	36
Crop line and mined-out areas of the Upper Kittanning coal .....	37
Crop line and mined-out areas of the Upper Freeport coal .....	38
Coal crop lines and structure contours.....	39
Friendsville.....	40
Coal crop lines and structure contours.....	40
Kingwood .....	41
Structure contours .....	41
Lake Lynn .....	42
Crop line and mined-out area of the Lower Freeport coal.....	42
Crop line and mined-out areas of the Upper Freeport coal .....	43
Crop line and mined-out areas of the Pittsburgh coal .....	44
Crop line and mined-out areas of the Redstone coal.....	45
Coal crop lines and structure contours.....	46
Mammoth.....	47
Coal crop lines and structure contours.....	47
Masontown .....	48
Crop line and mined-out areas of the Pittsburgh coal .....	48
Crop line and mined-out areas of the Redstone coal.....	49
Crop line and mined-out areas of the Sewickley coal .....	50
Crop line and mined-out areas of the Waynesburg coal.....	51
Coal crop lines and structure contours.....	52
Mather .....	53
Mined-out area of the Pittsburgh coal .....	53
Crop line of the Waynesburg coal.....	54
Coal crop line and structure contours .....	55
Mill Run .....	56
Crop line and mined-out areas of the Lower Kittanning coal .....	56
Crop line and mined-out areas of the Lower Freeport coal .....	57
Crop line and mined-out areas of the Upper Freeport coal .....	58
Coal crop lines and structure contours.....	59
Morgantown North.....	60
Crop line and mined-out areas of the Pittsburgh coal .....	60
Coal crop lines and structure contours .....	61
Mount Pleasant .....	62
Structure contours .....	62
New Salem .....	63
Crop line and mined-out areas of the Lower Bakerstown coal .....	63
Crop line and mined-out areas of the Pittsburgh coal .....	64
Crop line and mined-out areas of the Sewickley coal .....	65
Coal crop lines and structure contours .....	66
Ohiopyle .....	67
Crop line and mined-out areas of the Lower Kittanning coal .....	67
Crop line and mined-out area of the Upper Kittanning coal .....	68
Coal crop lines and structure contours .....	69
Seven Springs.....	70
Crop line and mined-out area of the Middle Kittanning coal .....	70
Crop line and mined-out area of the Upper Freeport coal.....	71
Coal crop lines and structure contours .....	72

	<i>Page</i>
Smithfield .....	73
Crop line and mined-out areas of the Upper Freeport coal .....	73
Crop line and mined-out areas of the Pittsburgh coal .....	74
Crop line and mined-out areas of the Redstone coal.....	75
Crop line and mined-out areas of the Sewickley coal .....	76
Coal crop lines and structure contours.....	77
Smithton .....	78
Crop line and mined-out area of the Pittsburgh coal .....	78
Coal crop line and structure contours .....	79
South Connellsville .....	80
Crop line and mined-out areas of the Clarion coal .....	80
Crop line and mined-out areas of the Upper Kittanning coal .....	81
Crop line and mined-out areas of the Lower Freeport coal.....	82
Crop line and mined-out areas of the Upper Freeport coal .....	83
Crop line and mined-out area of the Pittsburgh coal .....	84
Coal crop lines and structure contours.....	85
Uniontown .....	86
Crop line and mined-out areas of the Pittsburgh coal .....	86
Crop line and mined-out areas of the Sewickley coal .....	87
Coal crop lines and structure contours.....	88

## **FIGURES**

Figure 1. Index map of 7½-minute quadrangles in Fayette County .....	2
2. Guide to layout of compilation maps .....	3



# COAL RESOURCES OF FAYETTE COUNTY, PENNSYLVANIA

## PART 1. COAL CROP LINES, MINED-OUT AREAS, AND STRUCTURE CONTOURS

Compiled by  
James R. Shaulis

### INTRODUCTION

An important goal of the Bureau of Topographic and Geologic Survey is to provide accurate, timely information on Pennsylvania's bituminous coal. To achieve this goal, the Bureau is working in cooperation with the U.S. Geological Survey to establish the National Coal Resources Data System (NCRDS). NCRDS is a computer data system developed by the U.S. Geological Survey to facilitate coal-resource calculations for the nation on a county-by-county and seam-by-seam basis, and to produce various types of tables and maps of coal characteristics.

Before NCRDS can be used for a particular bituminous-coal-producing county, all available data on the coal must be entered into the computer system. These data include site-specific (point-location) stratigraphic measurements and coal analyses, and specific map elements compiled on 7½-minute topographic quadrangle maps. The map elements, which include coal outcrop lines and mined-out areas, are digitized and stored in the system for subsequent computer manipulations.

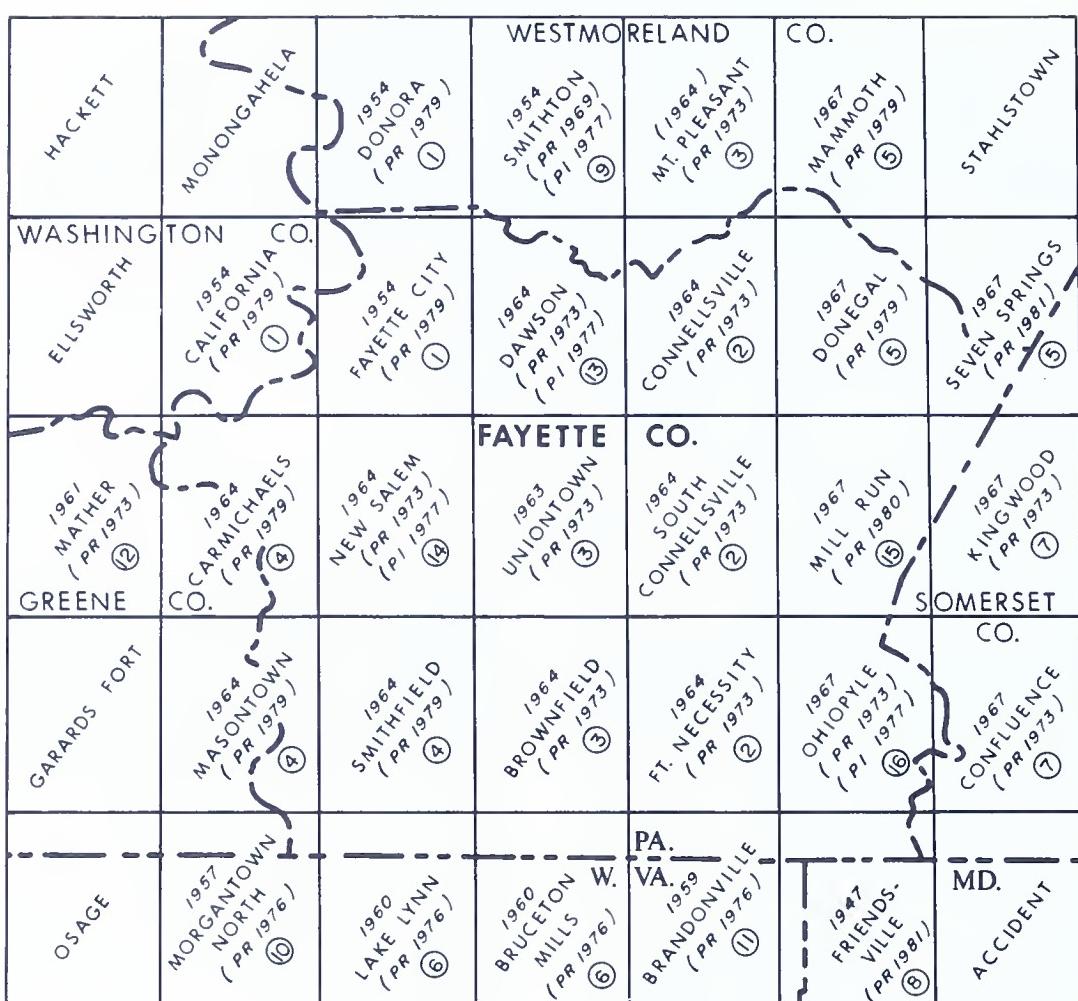
Inasmuch as the maps showing coal outcrop lines and mined-out areas are in constant demand by the coal industry, consultants, planners, government personnel, and academicians, they are being made available as part of the Pennsylvania Survey's Mineral Resource Report series. These maps will be of considerable help in exploration program planning, land acquisition, land use planning, and environmental protection.

Two types of coal maps may be included for each 7½-minute topographic quadrangle map covering Fayette County (Figure 1). First, there is a com-

posite coal outcrop map for all the principal or economically significant coal seams in the quadrangle; this map also includes the structure contours and fold axes. Coals are not considered "principal" or "economically significant" if they are thin, laterally discontinuous, or lack sufficient data and a record of prior mining. In quadrangles where a coal seam is considered to have a sufficient extent and thickness to be economically significant, the coal crop line is shown as a solid line. Where this relationship does not extend into an adjacent quadrangle, a question mark is shown near the quadrangle boundary. Second, there is a separate map for each mined principal seam showing the extent of all known strip and deep mining, up to the time of compilation. If none of the principal coals have been mined or crop out in a particular quadrangle, only the first kind of map is included. Each map has an explanation of sources of published and unpublished data, map reliability, map symbols, structure-contour intervals and datums, and names of fold axes. The general layout of the compilation maps is shown in Figure 2.

The map-reliability terms for structure contours are defined as follows: very good,  $\pm 10$  feet; good,  $\pm 20$  feet; fair,  $\pm 50$  feet; and poor,  $\pm >50$  feet. Because the coal crop lines are, for the most part, derived using interval projections from a given structural datum, their map-reliability terms have the same relative degrees of accuracy as the reliability terms for the structure contours.

Three separate datums were used to draw structure contours: (1) the base of the Pittsburgh coal seam; (2) the top of the Upper Freeport coal seam; and (3) the top of the Burgon Sandstone. In the areas of the county where these datums are shown,



Based on aerial photography taken:

- (1) 1952 and 1977.
- (2) 1962 and 1973.
- (3) 1962, 1963, and 1973.
- (4) 1962, 1963, and 1977.
- (5) 1967 and 1977.
- (6) 1956 and 1976.
- (7) 1966 and 1973.
- (8) 1946 and 1974.
- (9) 1952, 1969, and 1977.
- (10) 1955 and 1976.
- (11) 1957 and 1976.
- (12) 1958 and 1973.
- (13) 1962, 1973, and 1977.
- (14) 1962, 1963, 1973, and 1977.
- (15) 1966 and 1977.
- (16) 1966, 1973, and 1977.

Figure 1. Index map of 7 1/2-minute quadrangles in Fayette County. Date of publication of topographic quadrangle map is shown in italic type. Dates of photorevision (PR) and photoinspection (PI) are shown in parentheses.

they represent the geologic horizons for which the most accurate structural control could be established.

These maps represent a modification and revision of the county mapping done by Hickok and Moyer (1940), and mapping by Shaffner (1963) in northeast Fayette County. Since both reports were done, new data have become available as a result of detailed

coal-exploration programs, increased surface-mining activities, and more accurate 7 1/2-minute topographic bases. This new information has mainly been used to revise the structure and stratigraphy of the area east of Chestnut Ridge. The area west of Chestnut Ridge had previously been mapped using information derived from the mining of the Pittsburgh coal seam which underlay about 60 per-

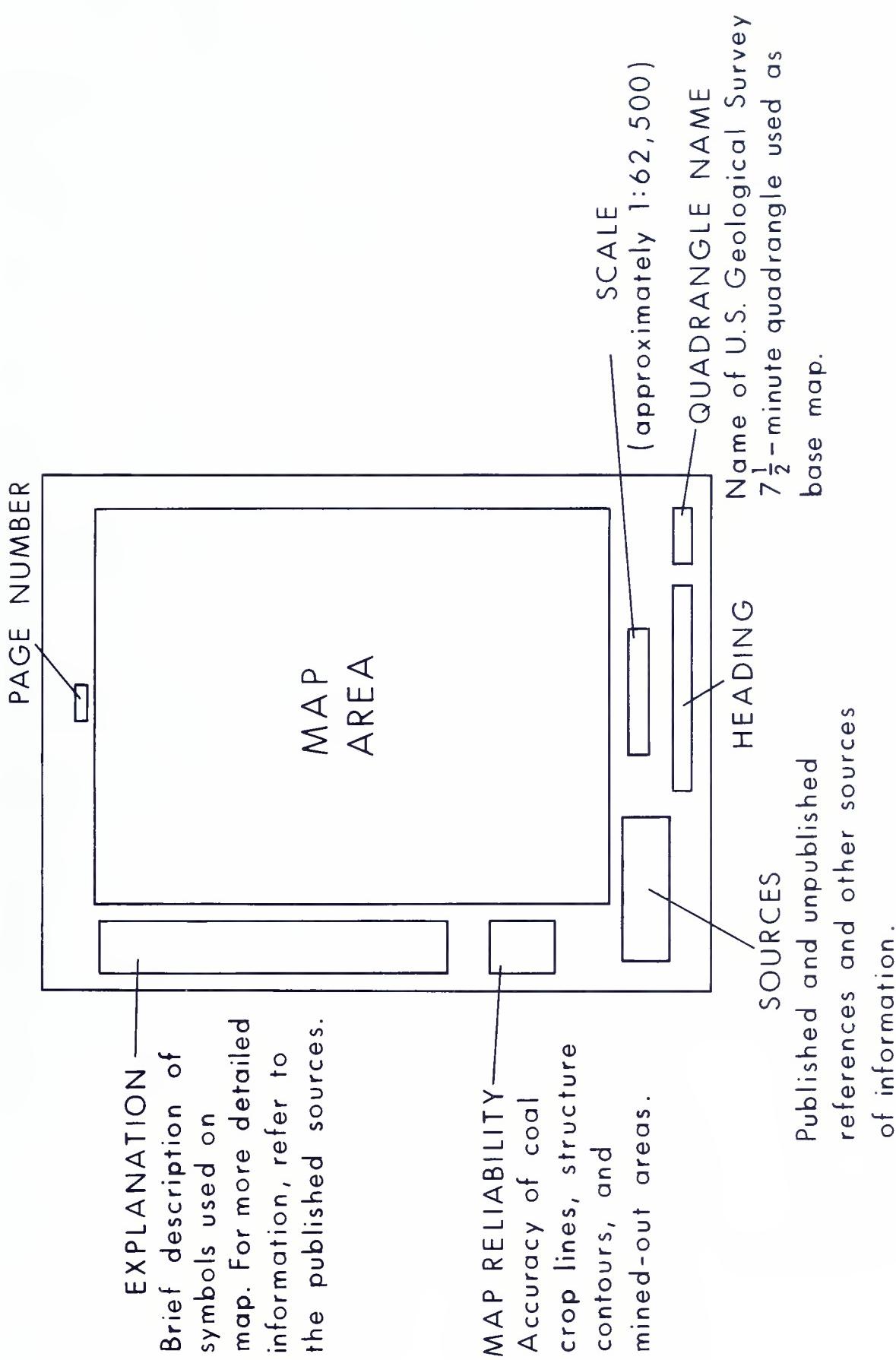


Figure 2. Guide to layout of compilation maps.

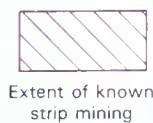
cent of the western part of the county. Because this seam was extensively mined, good structural control was available for geologic mapping. Therefore, only slight modifications were made to the previous mapping of Hickok and Moyer (1940) in this area of the county.

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EXPLANATION

Crop line of the Brookville coal



Extent of known strip mining



MAP RELIABILITY

Coal crop line—poor to good  
Limits of known strip mining—approximate

SOURCES

Crop line compiled by J. R. Shaulis from unpublished data; some reference to Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p. Limits of strip mining based on field checking.

UTM COORDINATES  
DECLINATION AT CENTER OF SHEET  
65° 10' 15" N  
107° 55' 15" W  
154.13

NATIONAL GEODETIC VERTICAL DATUM OF 1929

CROP LINE AND MINED-OUT AREA OF THE  
BROOKVILLE COAL

ROAD CLASSIFICATION

Medium-duty	Light-duty
Unimproved rd.	.....
U. S. Route	State Route

BRANDONVILLE



EXPLANATION

CROP LINES

uf Upper Freeport coal

uk Upper Kittanning coal

lk Lower Kittanning coal

bk Brookville coal

Anticline  
Showing axial-plane trace and direction of plunge.

2000 Structure contour

Altitude of the top of the Upper Freeport coal, in feet above mean sea level. Contour interval 100 feet.

2000

Structure contour

Altitude of the top of the

Upper Freeport coal, in feet

above mean sea level. Con-

tour interval 100 feet.

MAP RELIABILITY

Coal crop line—poor

to good

Structure contours—

poor to good



SOURCES

Crop lines modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Structure contours compiled by J. R. Shaulis from unpublished data; some reference to Hickok and Moyer (1940).

SCALE ~1:62500  
CONTOUR INTERVAL 20 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET  
KILOMETERS

ROAD CLASSIFICATION  
Medium-duty  
Unimproved  
U.S. Route  
State Route

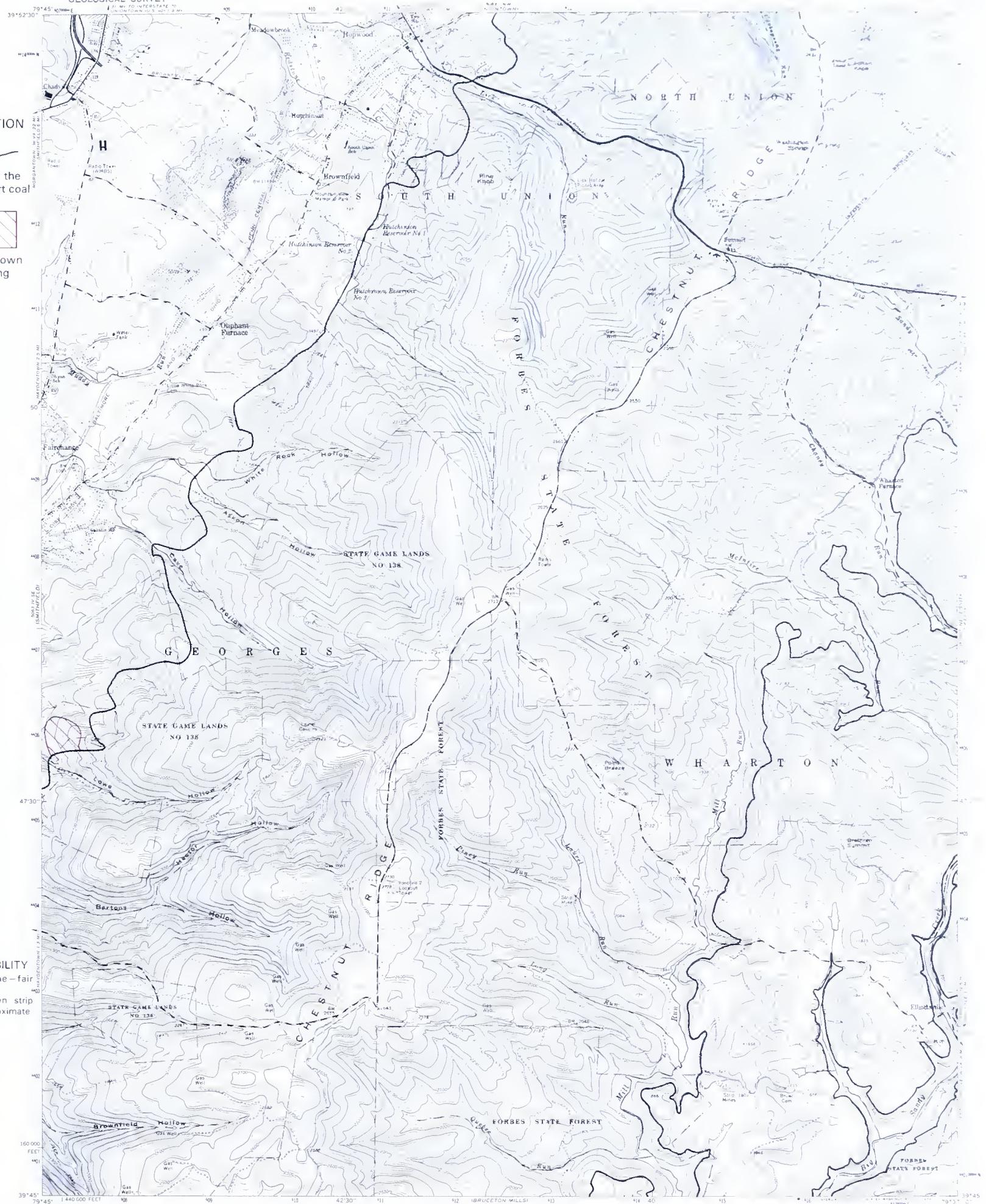
BRANDONVILLE

COAL CROP LINES AND  
STRUCTURE CONTOURS



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

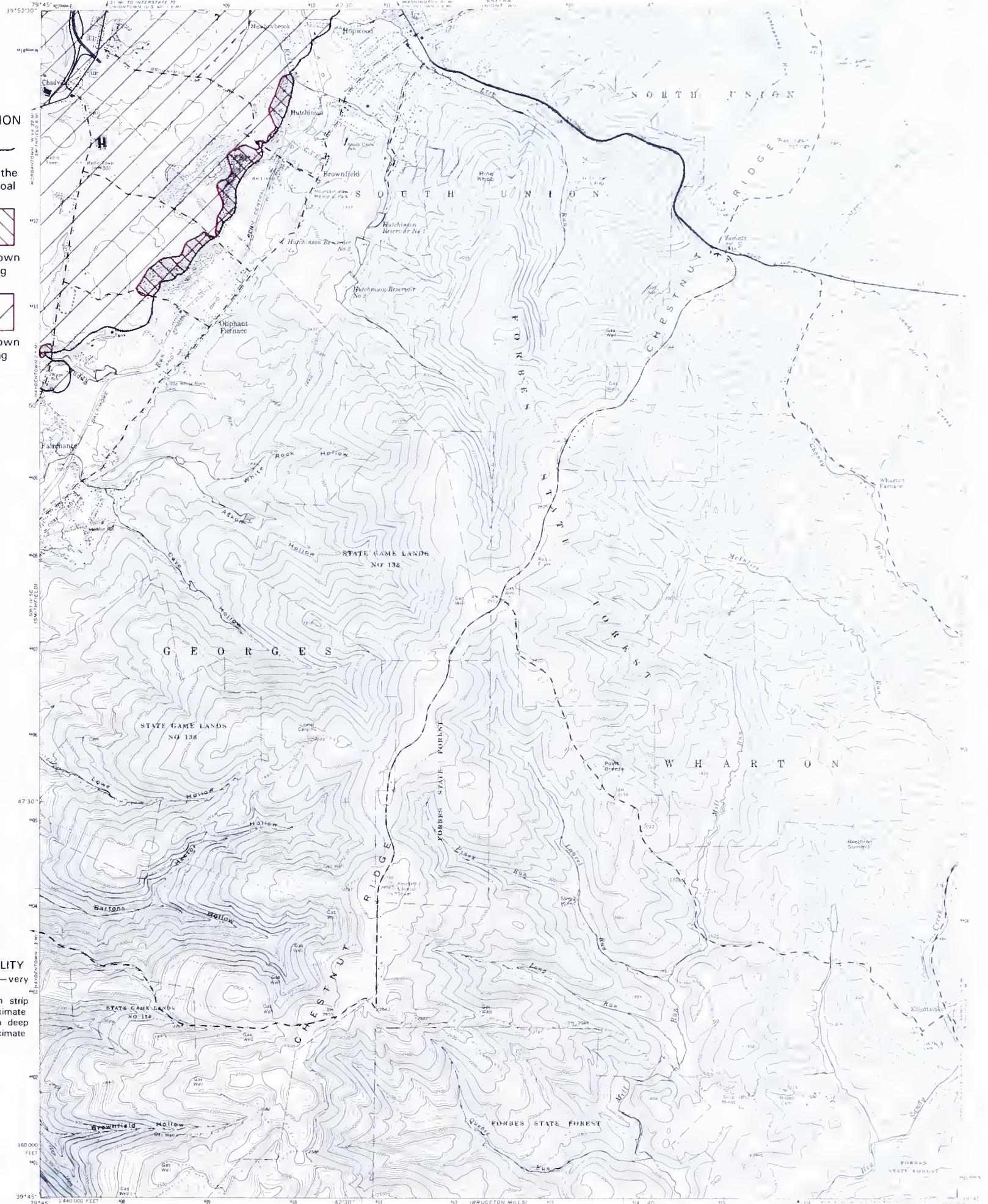
7



CROP LINE AND MINED-OUT AREA OF THE  
UPPER FREEPORT COAL

BROWNFIELD





EXPLANATION

Crop line of the Pittsburgh coal

Extent of known strip mining

Extent of known deep mining

MAP RELIABILITY

Coal crop line—very good

Limits of known strip mining—approximate

Limits of known deep mining—approximate

SOURCES

Crop line compiled by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map.

Limits of deep mining from Pennsylvania Department of Environmental Resources, Bureau of Bituminous Mine Subsidence (1971), unpublished map.

CROP LINE AND MINED-OUT AREAS OF THE  
PITTSBURGH COAL

BROWNFIELD





#### SOURCES

Crop line slightly modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940). *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.  
Limits of strip mining based on interpretation of topographic map.

#### CROP LINE AND MINED-OUT AREA OF THE REDSTONE COAL

BROWNFIELD





#### SOURCES

Crop line slightly modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.  
Limits of strip mining based on interpretation of topographic map.  
Limits of deep mining from unpublished mine maps.

#### CROP LINE AND MINED-OUT AREAS OF THE SEWICKLEY COAL

**BROWNFIELD**

1000' 1000' 1000' 1000' 1000' 1000'  
EAST WEST NORTH SOUTH  
1000' 1000' 1000' 1000' 1000' 1000'  
CONTOUR INTERVAL 20 FEET  
DATUM IS MEAN SEA LEVEL

Grid  
Magnetic North  
Declination  
U.S. Army  
Scale  
1:625,000

\* GRID AND 1973 MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET



EXPLANATION

CROP LINES

wb Waynesburg coal

s Sewickley coal

r Redstone coal

p Pittsburgh coal

lb Lower Bakerstown coal

bc Brush Creek coal

uf Upper Freeport coal

uk Upper Kittanning coal

lk Lower Kittanning coal

bk Brookville coal

Anticline  
Showing axial-plane trace and direction of plunge

Syncline  
Showing axial-plane trace and direction of plunge

-1000 P-  
Base of Pittsburgh coal

-2000 UF-  
Top of Upper Freeport coal

-2500 B-  
Top of Burgoon Sandstone

Structure contours  
Altitudes in feet above mean sea level. Contour interval 100 feet

MAP RELIABILITY  
Coal crop lines—fair to very good  
Structure contours—fair to very good

SOURCES

Crop lines slightly to extensively modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.  
Structure contours on top of Upper Freeport coal and on top of Burgoon Sandstone compiled by J. R. Shaulis from unpublished data; minor reference to unpublished map by W. E. Edmunds (1976) and to Hickok and Moyer (1940). Structure contours on base of Pittsburgh coal compiled by A. D. Glover (1976) from Hickok and Moyer (1940).

UM GRID AND 1973 MAGNETIC NORTH  
DECIMATION AT CENTER OF SHEET

CONTOUR INTERVAL 20 FEET  
DATUM S MEAN SEA LEVEL

DALE SANS CAT N

BROWNFIELD

COAL CROP LINES AND  
STRUCTURE CONTOURS



EXPLANATION

CROP LINES

**uf** — Upper Freeport coal

**lf** — Lower Freeport coal

**uk** — Upper Kittanning coal

**lk** — Lower Kittanning coal

**bk** — Brookville coal

**Anticline**  
Showing axial-plane trace and direction of plunge

**Syncline**  
Showing axial-plane trace and direction of plunge.

**-2000 UF-**  
Top of Upper Freeport coal

**-2000 B-**  
Top of Burgoon Sandstone

Structure contours  
Altitudes in feet above mean sea level. Contour interval 100 feet

MAP RELIABILITY  
Coal crop lines—fair to good  
Structure contours—fair to good



SOURCES

Crop lines modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Structure contours compiled by J. R. Shaulis from unpublished data; minor reference to Hickok and Moyer (1940) and unpublished map by W. E. Edmunds (1976).

UTM GRID AND 1950 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

107° 51' N 0° 50' W  
15° 15'

NATIONAL GEODETIC VERTICAL DATUM OF 1929

SCALE ~1:62,500

0 1000 2000 3000 4000 5000 6000 FEET  
1 KILOMETER

ROAD CLASSIFICATION

Major highway.....

Unimproved road.....

State Route U.S. Route

Local road.....

Unimproved road.....

Local road.....





## EXPLANATION

Crop line of the Pittsburgh coal

Extent of known strip mining

Extent of known deep mining

## MAP RELIABILITY

Coal crop line—very good

Limits of known strip mining—approximate

Limits of known deep mining—approximate



## SOURCES

Crop line compiled by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map.

Limits of deep mining from Pennsylvania Department of Environmental Resources, Bureau of Bituminous Mine Subsidence (1971), unpublished map.

## CROP LINE AND MINED-OUT AREAS OF THE PITTSBURGH COAL

**CALIFORNIA**

UTM GRID AND 1970 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

PENNSYLVANIA

PAIRMAN LOCATOR

ROAD CLASSIFICATION  
Highway  
Major  
Minor  
Local  
Light Local

SCALE ~1:62500  
0 1000 2000 3000 4000 5000 6000 FEET  
0 1 2 3 4 5 6 KILOMETERS





EXPLANATION

CROP LINES

**W** Waynesburg coal

**r** Redstone coal

**p** Pittsburgh coal

Anticline  
Showing axial-plane trace and direction of plunge.

Syncline  
Showing axial-plane trace and direction of plunge.

**-700-**  
Structure contour  
Altitude of the base of the  
Pittsburgh coal, in feet  
above mean sea level. Con-  
tour interval 20 feet.

MAP RELIABILITY  
Coal crop lines—good  
to very good  
Structure contours—  
very good



SOURCES

Crop lines slightly modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, U.S. Geological Survey, 4th ser., County Report 26, 530 p.

Structure contours compiled by A. D. Glover (1976) from Hickok and Moyer (1940) and Schweinfurth, S. P. (1967), *Geologic map of the California quadrangle, Washington and Fayette Counties, Pennsylvania*, U.S. Geological Survey Geologic Quadrangle Map GQ-648, scale 1:24,000.

CONTOUR INTERVAL 20 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

PENNSYLVANIA  
QUADRANGLE LOCATION

CALIFORNIA

COAL CROP LINES AND  
STRUCTURE CONTOURS





EXPLANATION

Crop line of the Pittsburgh coal

Extent of known deep mining



SOURCES

Crop line compiled by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of deep mining from Pennsylvania Department of Environmental Resources, Bureau of Bituminous Mine Subsidence (1971), unpublished map.

CROP LINE AND MINED-OUT AREA OF THE  
PITTSBURGH COAL

CARMICHAELS

UTM GRID AND 1970 MAGNETIC NORTH  
DECIMATION AT CENTER OF SHEET

SCALE ~1:62,500

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 5 0 MILE

CONTOUR INTERVAL 10 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929



ROAD CLASSIFICATION

Heavy-duty	Light-duty
Medium-duty	Unimproved rd.

(State Route)





EXPLANATION

Crop line of the Waynesburg coal

Extent of known strip mining



CROP LINE AND MINED-OUT AREAS OF THE  
**WAYNESBURG COAL**

**CARMICHAELS**







EXPLANATION

CROP LINES

**uf**

Upper Freeport coal

**uk**

Upper Kittanning  
coal

**-1500-**  
Structure contour

Altitude of the top of the  
Upper Freeport coal, in feet  
above mean sea level. Contour  
interval 100 feet.

MAP RELIABILITY

Coal crop lines—fair  
Structure contours—  
fair

SOURCES

Crop lines and structure contours compiled by J. R. Shaulis from  
unpublished data. Minor reference to Hickok, W. O., IV, and  
Moyer, F. T. (1940), *Geology and mineral resources of Fayette  
County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser.,  
County Report 26, 530 p.; and Flint, N. K. (1965), *Geology and  
mineral resources of southern Somerset County, Pennsylvania*,  
Pennsylvania Geological Survey, 4th ser., County Report 56A,  
267 p.

## COAL CROP LINES AND STRUCTURE CONTOURS

ROAD CLASSIFICATION

Prominent highway of major  
hard surface  
Secondary highway or roads  
Local roads  
Weathered  
U. S. Route  
State Route

Scale: 1 mile = 16 kilometers  
1 kilometer = 0.6 miles

CONFLUENCE

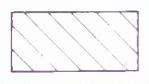
</div



EXPLANATION



Crop line of the Clarion coal



Extent of known strip mining



SOURCES

Crop line modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

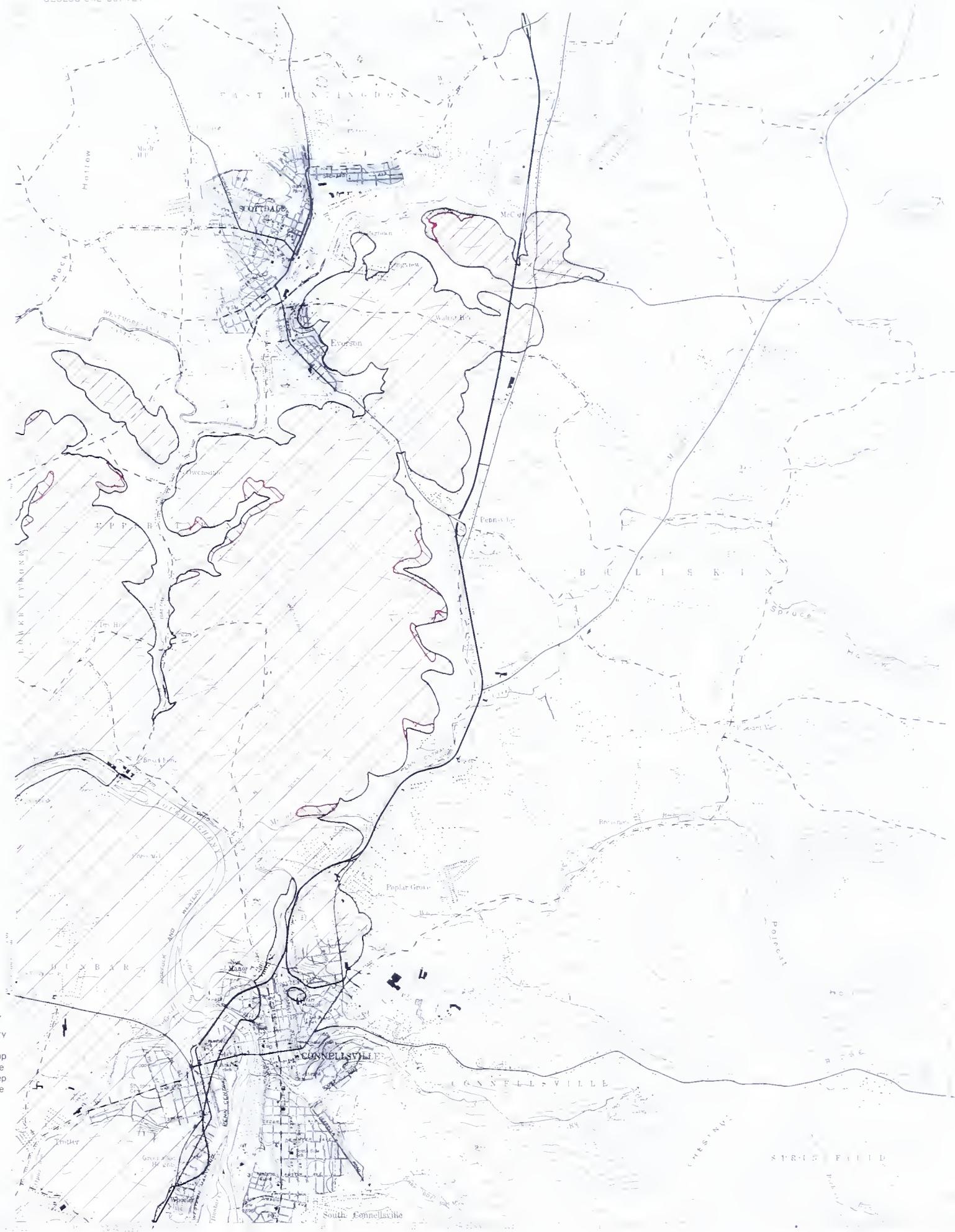
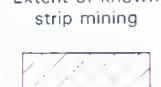
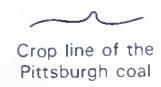
Limits of strip mining based on interpretation of topographic map.

CROP LINE AND MINED-OUT AREAS OF THE  
CLARION COAL

CONNELLSVILLE



EXPLANATION



MAP RELIABILITY  
Coal crop line—very good  
Limits of known strip mining—approximate  
Limits of known deep mining—approximate

SOURCES

Crop line compiled by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map.

Limits of deep mining from Pennsylvania Department of Environmental Resources, Bureau of Bituminous Mine Subsidence (1971), unpublished map.

STATE MATERIALS SURVEY  
DEPARTMENT OF ENVIRONMENTAL RESOURCES

SCALE ~1:62500

CONNELLSVILLE  
CROP LINE AND MINED-OUT AREAS OF THE  
PITTSBURGH COAL

CONNELLSVILLE



EXPLANATION

CROP LINES

S Sewickley coal

R Redstone coal

P Pittsburgh coal

UF Upper Freeport coal

UK Upper Kittanning coal

LK Lower Kittanning coal

CL Clarion coal

Anticline  
Showing axial-plane trace and direction of plunge.

Syncline  
Showing axial-plane trace and direction of plunge.

1000 P Base of Pittsburgh coal

1000 UF Top of Upper Freeport coal

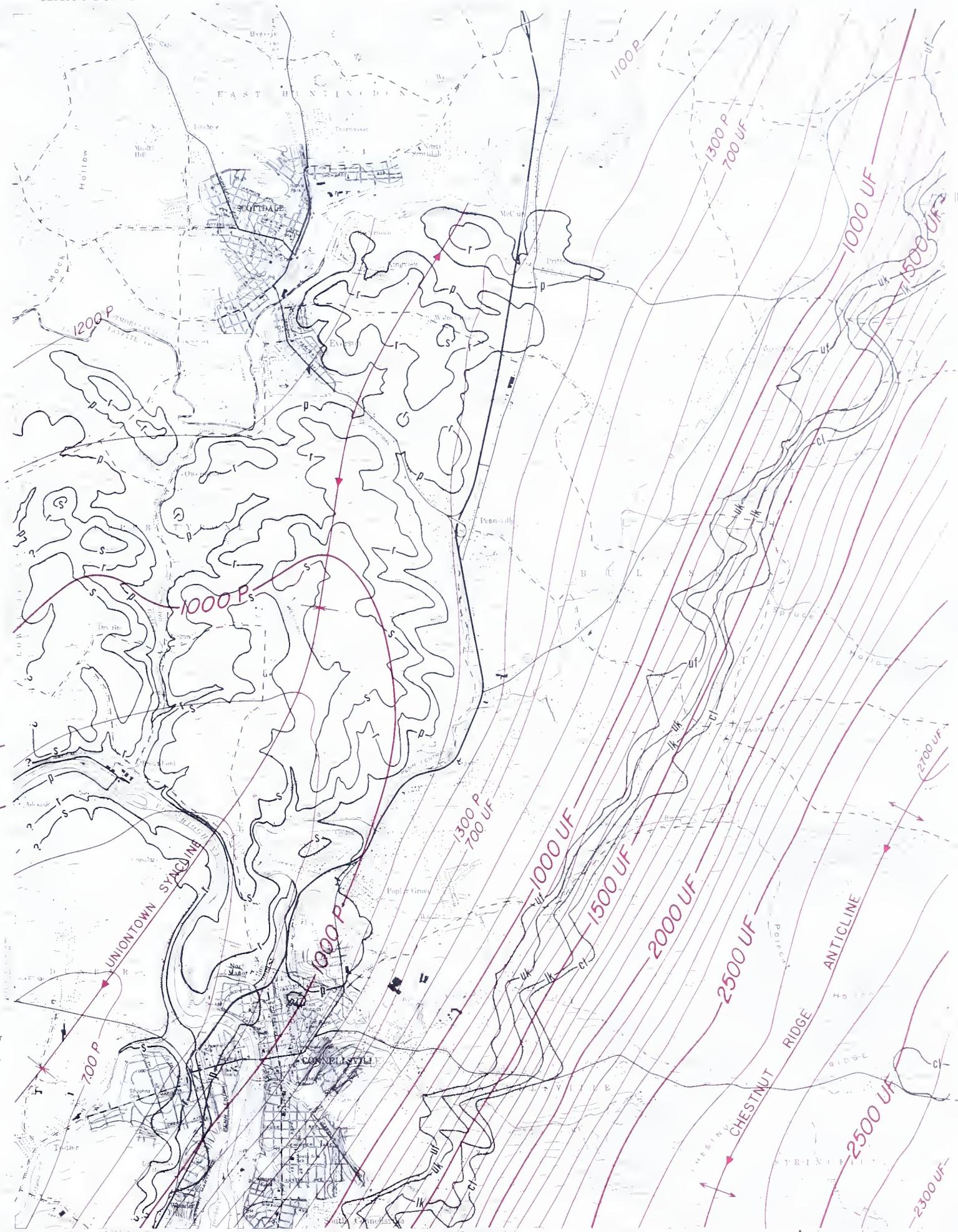
Structure contours

Altitudes in feet above mean sea level. Contour interval 100 feet

MAP RELIABILITY

Coal crop lines—fair to very good

Structure contours—fair to very good



SOURCES

Crop lines modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Structure contours on top of Upper Freeport coal compiled by J. R. Shaulis from unpublished data; minor reference to unpublished map by W. E. Edmunds (1976) and to Hickok and Moyer (1940). Structure contours on base of Pittsburgh coal compiled by A. D. Glover (1976) from Hickok and Moyer (1940).

COAL CROP LINES AND  
STRUCTURE CONTOURS

CONNELLSVILLE



EXPLANATION



Crop line of the  
Upper Freeport coal



Extent of known  
strip mining



Extent of known  
deep mining



CROP LINE AND MINED-OUT AREAS OF THE  
UPPER FREEPORT COAL



EXPLANATION

Crop line of the Lower Bakerstown coal

Extent of known strip mining



CROP LINE AND MINED-OUT AREAS OF THE  
LOWER BAKERSTOWN COAL



EXPLANATION

Crop line of the Pittsburgh coal

Extent of known strip mining

Extent of known deep mining



CROP LINE AND MINED-OUT AREAS OF THE  
PITTSBURGH COAL

DAWSON



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

## EXPLANATION

- CROP LINES**

—wb—  
Waynesburg coal

—p—  
Pittsburgh coal

—lb—  
Lower Bakerstown  
coal

—uf—  
Upper Freeport coal

—mk—  
Middle Kittanning  
coal

—lk—  
Lower Kittanning  
coal

Anticline

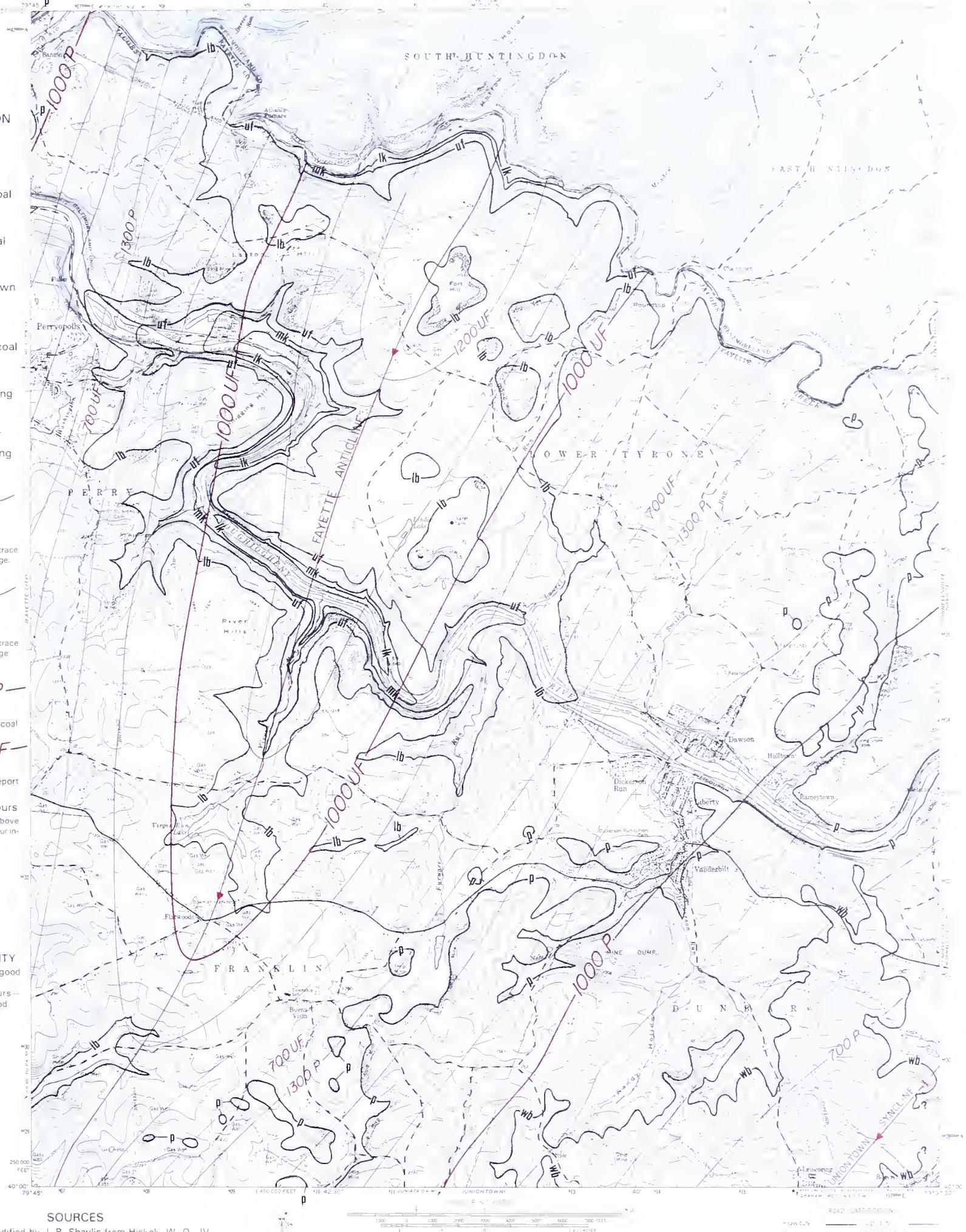
Showing axial-plane trace  
and direction of plunge.

Syncline

Showing axial-plane trace  
and direction of plunge.

and direction of plunge  
 $-1000P-$   
 Base of Pittsburgh coal  
 $-1000UF-$   
 Top of Upper Freeport  
 coal  
 Structure contours  
 Altitudes in feet above  
 mean sea level. Contour interval  
 100 feet

**MAP RELIABILITY**  
Coal crop lines—good  
to very good  
Structure contours—  
good to very good



## SOURCES

Crop lines modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.  
Structure contours on top of Upper Freeport coal compiled by J. R. Shaulis from unpublished data; minor reference to Hickok and Moyer (1940). Structure contours on base on Pittsburgh coal compiled by A. D. Glover (1976) from Hickok and Moyer (1940).

## COAL CROP LINES AND STRUCTURE CONTOURS

DAWSON





EXPLANATION

Crop line of the  
Clarion coal

Extent of known  
strip mining



CROP LINE AND MINED-OUT AREAS OF THE  
CLARION COAL

DONEGAL





EXPLANATION

Crop line of the Middle Kittanning coal

Extent of known strip mining

Extent of known deep mining



MAP RELIABILITY  
Coal crop line—fair to very good  
Limits of known strip mining—approximate  
Limits of known deep mining—approximate

SOURCES

Crop line modified by J. R. Shaulis from Shaffner, M. N. (1963), *Geology and mineral resources of the Donegal quadrangle, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Atlas 48, 116 p.

Limits of strip mining based on interpretation of topographic map and on field checking

Limits of deep mining from Shaffner (1963) and unpublished mine maps.

CROP LINE AND MINED-OUT AREAS OF THE  
MIDDLE KITTANNING COAL

PENNSYLVANIA  
QUADRANGLE LOCATION

ROAD ASIFICATION
Primary highway, all weather hard surface
Secondary highway, all weather hard surface
Unimproved road, fairer dry weather
Interstate Route
State Route

DONEGAL





EXPLANATION

Crop line of the Upper Kittanning coal

Extent of known strip mining



MAP RELIABILITY  
Coal crop line—fair  
to good  
Limits of known strip  
mining—approximate

SOURCES

Crop line modified by J. R. Shaulis from Shaffner, M. N. (1963), *Geology and mineral resources of the Donegal quadrangle, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Atlas 48, 116 p.

Limits of strip mining based on interpretation of topographic map  
and on field checking.

CONTOUR INTERVAL 20 FEET  
NATIONAL GEODIGITAL VERTICAL DATUM OF 1929

CROP LINE AND MINED-OUT AREAS OF THE  
UPPER KITTANNING COAL

DONEGAL

ROAD CLASSIFICATION  
Primary highway, all weather  
hard surface  
Secondary highway, all weather  
hard surface  
Unimproved road, all weather  
soft surface  
Interstate Route  
State Route

PENNSYLVANIA  
QUADRANGLE LOCATION

UTM GRID AND 1979 MAGNETIC NORTH  
DECORATION AT CENTER OF SHEET





## EXPLANATION

Crop line of the Lower Freeport coal

Extent of known strip mining



CROP LINE AND MINED-OUT AREAS OF THE  
LOWER FREEPORT COAL

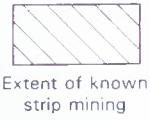
DONEGAL



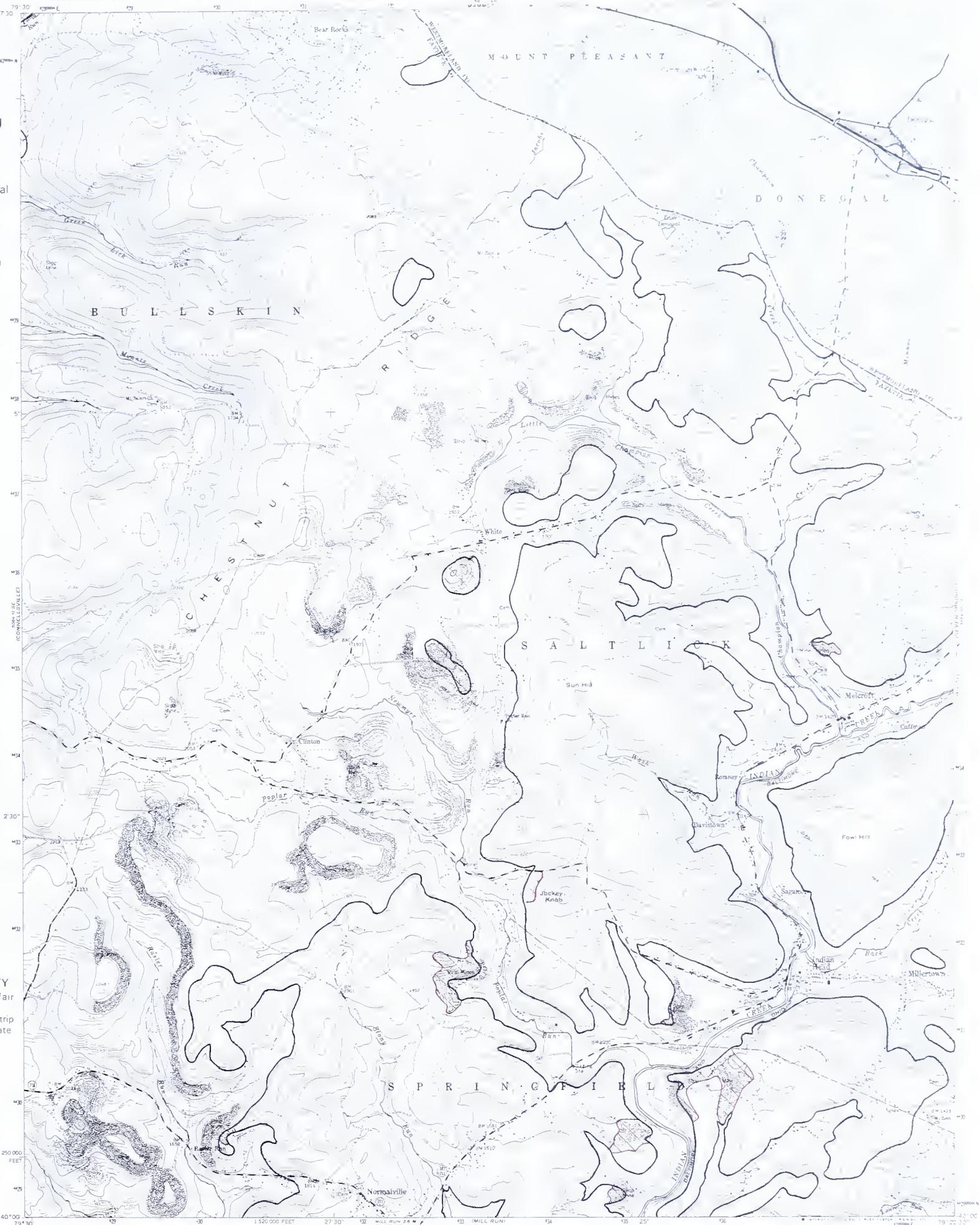


EXPLANATION

Crop line of the  
Upper Freeport coal



Extent of known  
strip mining



CROP LINE AND MINED-OUT AREAS OF THE  
UPPER FREEPORT COAL

UTM GRID AND 1973 MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET  
EAST 116 WELS 1'00" 78W.5

CONTOUR INTERVAL 20 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

PENNSYLVANIA  
QUADRANGLE LOCATION





EXPLANATION

CROP LINES

—uf—  
Upper Freeport coal

—lf—  
Lower Freeport coal

—uk—  
Upper Kittanning coal

—mk—  
Middle Kittanning coal

—cl—  
Clarion coal

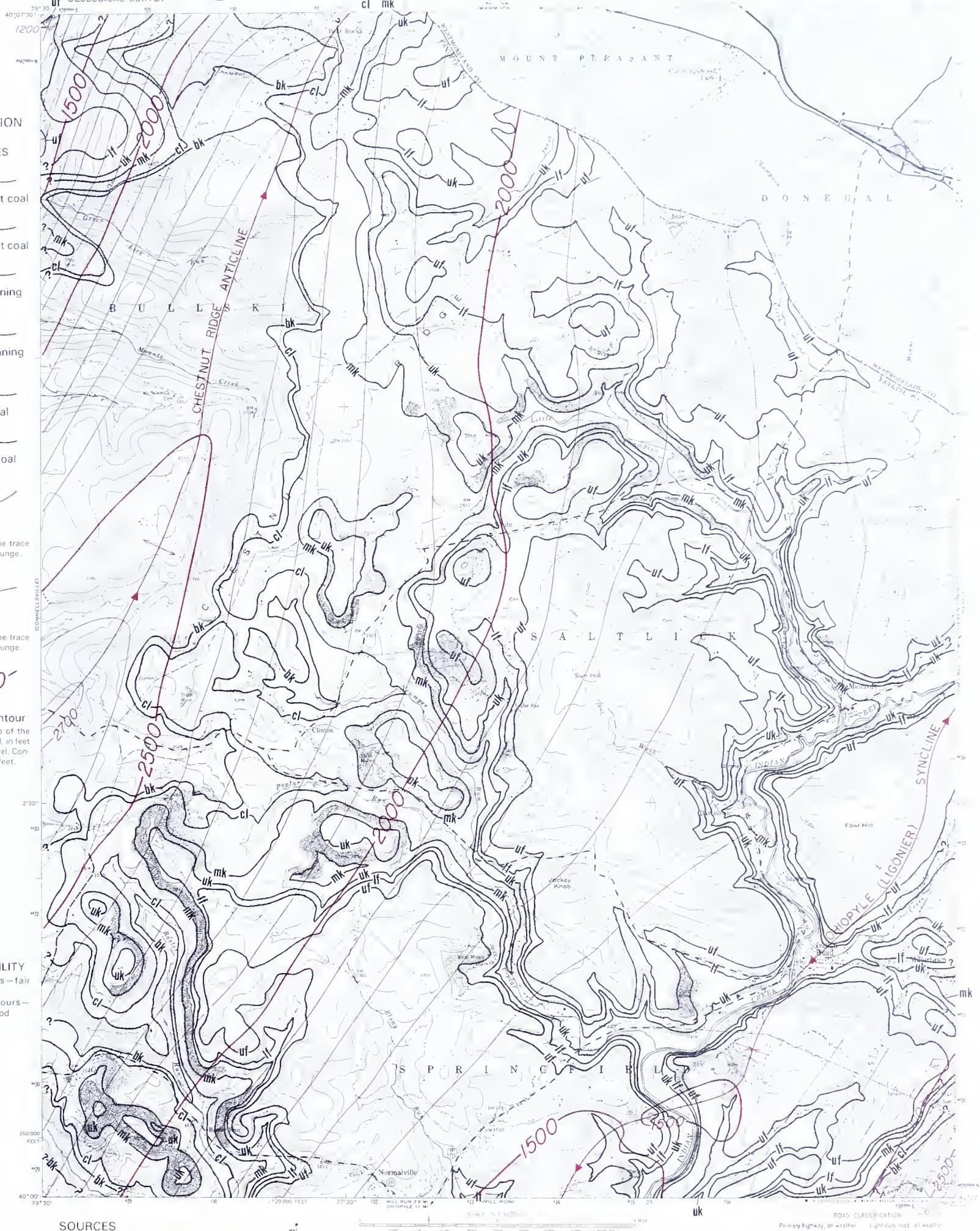
—bk—  
Brookville coal

—X—  
Anticline  
Showing axial-plane trace and direction of plunge.

—S—  
Syncline  
Showing axial-plane trace and direction of plunge.

—2500—  
Structure contour  
Altitude of the top of the Upper Freeport coal, in feet above mean sea level. Contour interval 100 feet.

MAP RELIABILITY  
Coal crop lines—fair to very good  
Structure contours—fair to very good



SOURCES

Crop lines modified by J. R. Shaulis from Shaffner, M. N. (1963), *Geology and mineral resources of the Donegal quadrangle, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Atlas 48, 116 p.

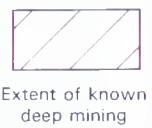
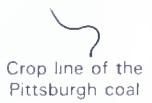
Structure contours compiled by J. R. Shaulis from unpublished data and unpublished mine maps, some reference to Shaffner (1963) and unpublished map by W. E. Edmunds (1976).

## COAL CROP LINES AND STRUCTURE CONTOURS

DONEGAL



EXPLANATION



MAP RELIABILITY  
Coal crop line—very  
good  
Limits of known deep  
mining—approximate



SOURCES

Crop line compiled by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940). *Geology and mineral resources of Fayette County, Pennsylvania*. Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of deep mining from Pennsylvania Department of Environmental Resources, Bureau of Bituminous Mine Subsidence (1971), unpublished map.

CONTOUR INTERVAL 20 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

PENNSYLVANIA  
LAUREL CREEK CO.

DONORA

CROP LINE AND MINED-OUT AREA OF THE  
PITTSBURGH COAL



EXPLANATION

CROP LINES

- wb Waynesburg coal
- Redstone coal
- p Pittsburgh coal



Syncline

Showing axial plane trace and direction of plunge.

—700—

Structure contour

Altitude of the base of the Pittsburgh coal in feet above mean sea level. Contour interval 20 feet



MAP RELIABILITY

Coal crop lines—good  
to very good  
Structure contours—  
very good

SOURCES

Crop lines slightly modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940). *Geology and mineral resources of Fayette County, Pennsylvania*. Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.  
Structure contours compiled by A. D. Glover (1976) from Hickok and Moyer (1940).

1950 GRID AND 1970 MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET

CONTOUR INTERVAL 20 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

PENNSYLVANIA  
FAYETTE COUNTY

CLASS F DATA  
High Low   
Medium   
Very Low

## COAL CROP LINES AND STRUCTURE CONTOURS

DONORA



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY



## EXPLANATION

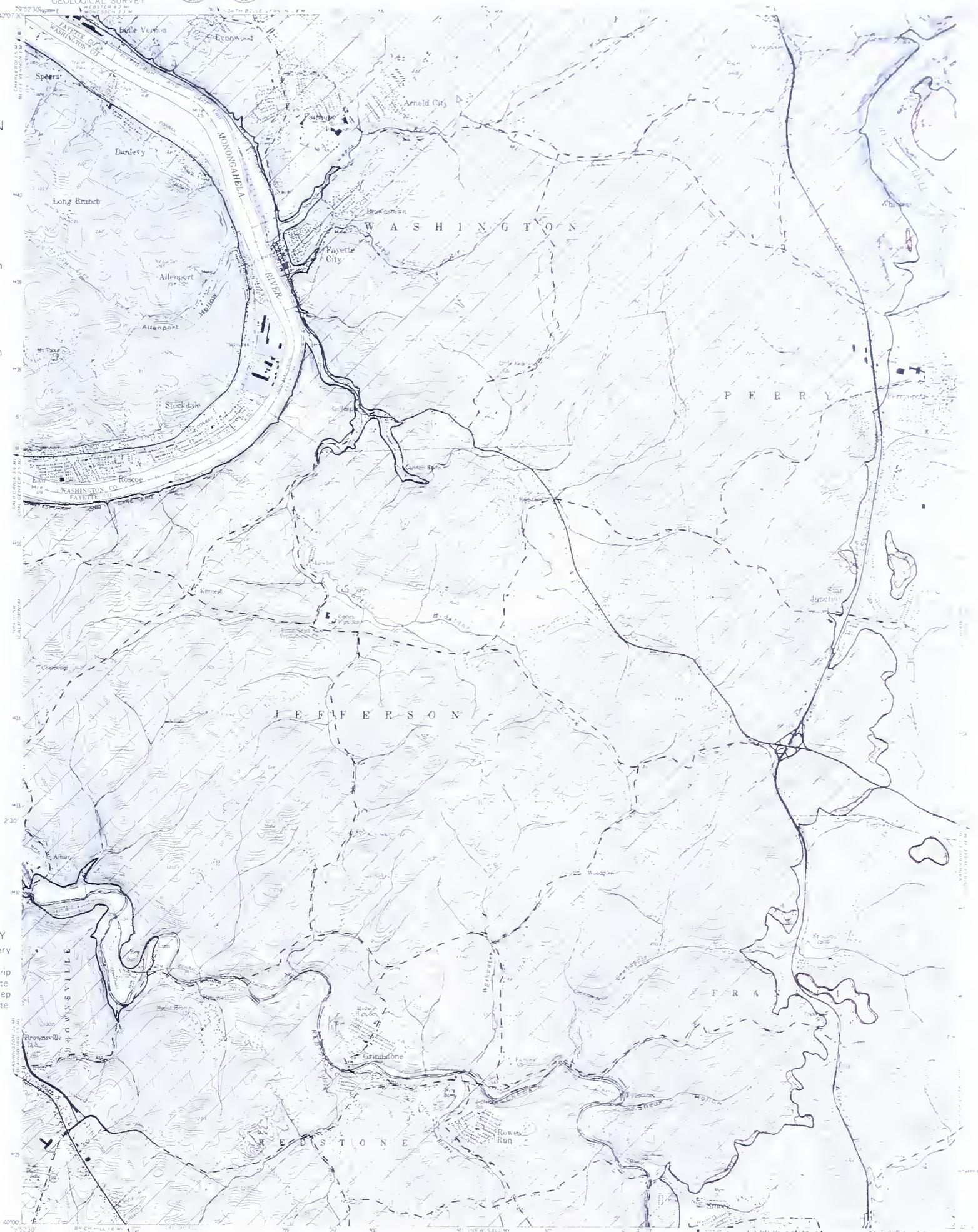
## Crop line of the Pittsburgh coal



### Extent of known strip mining



### Extent of known deep mining



## SOURCES

Crop line compiled by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940). *Geology and mineral resources of Fayette County, Pennsylvania*. Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map.

Limits of deep mining from Pennsylvania Department of Environmental Resources, Bureau of Bituminous Mine Subsidence (1971), unpublished map.

## CROP LINE AND MINED-OUT AREAS OF THE **PITTSBURGH COAL**

## FAYETTE CITY



EXPLANATION

CROP LINES

**W** Washington coal

**wb** Waynesburg coal

**r** Redstone coal

**p** Pittsburgh coal

**lb** Lower Bakerstown coal

 Anticline  
Showing axial-plane trace and direction of plunge.

 Syncline  
Showing axial-plane trace and direction of plunge.

**-1000P-**

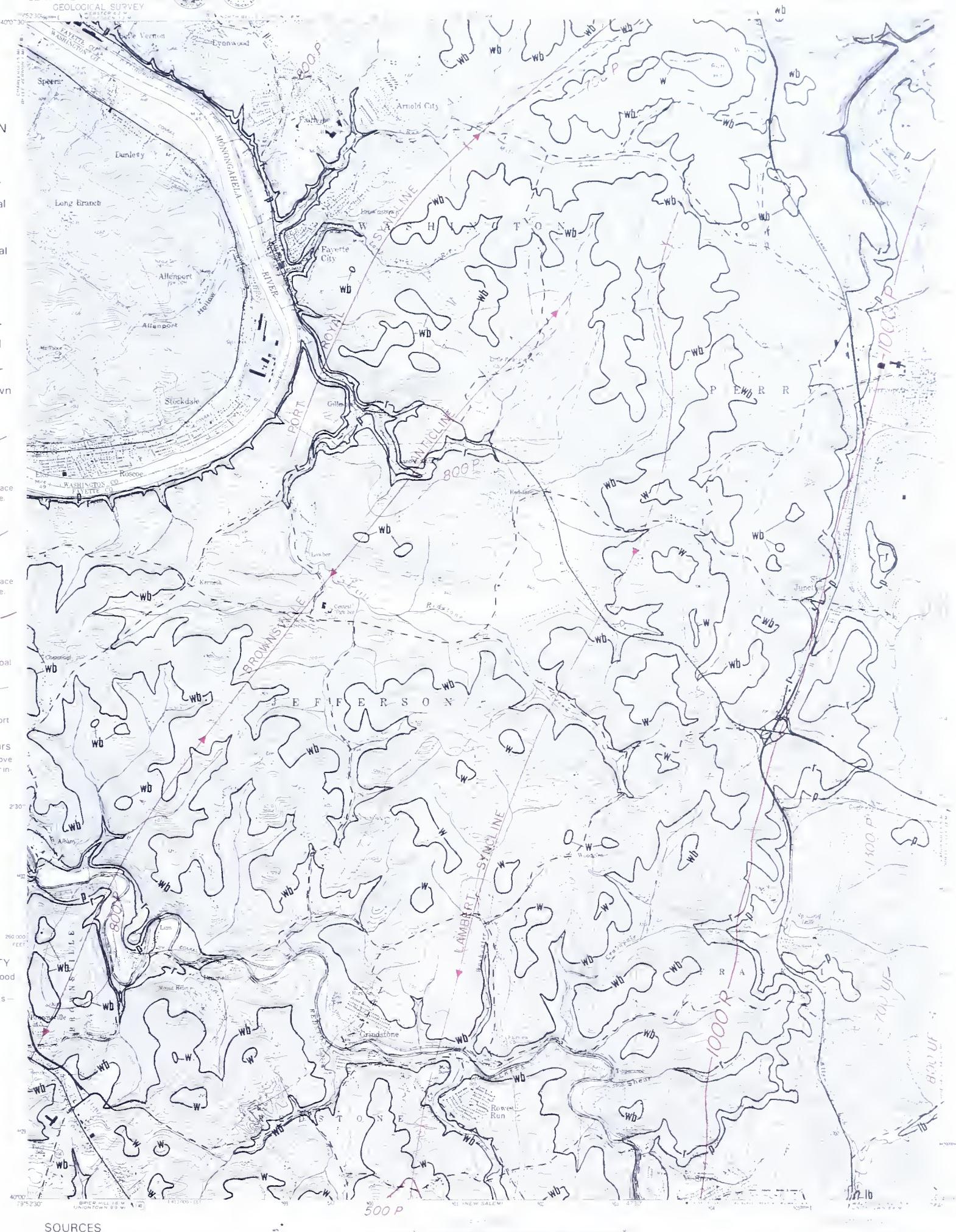
Base of Pittsburgh coal

**-700 UF-**

Top of Upper Freeport coal

Structure contours  
Altitudes in feet above mean sea level. Contour interval 100 feet

MAP RELIABILITY  
Coal crop lines—good to very good  
Structure contours—very good



SOURCES

Crop lines slightly modified by J. R. Shaulis from Hickok, W. O. IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Structure contours compiled by A. D. Glover (1976) from Hickok and Moyer (1940).

## COAL CROP LINES AND STRUCTURE CONTOURS

FAYETTE CITY



EXPLANATION

Crop line of the Lower Kittanning coal

Extent of known strip mining

Extent of known deep mining



## FORT NECESSITY

### CROP LINE AND MINED-OUT AREAS OF THE LOWER KITTANNING COAL



EXPLANATION

Crop line of the  
Upper Kittanning coal

Extent of known  
strip mining

Extent of known  
deep mining



**CROP LINE AND MINED-OUT AREAS OF THE  
UPPER KITTANNING COAL**

**FORT NECESSITY**



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY



## SOURCES

Crop line modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.; and Campbell, M. R. (1902), *Masontown-Uniontown folio, Pennsylvania*, U.S. Geological Survey Geologic Atlas of the U.S., Folio 82, 21 p.  
Limits of strip mining based on interpretation of topographic map and on field checking.

## CROP LINE AND MINED-OUT AREAS OF THE UPPER FREEPORT COAL

# FORT NECESSITY





**SOURCES**

Crop lines compiled by J. R. Shaulis from unpublished data. Minor reference to Hickok, W. O., IV, and Moyer, F. T. (1940). *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p., and Campbell, M. R. (1902), *Masontown-Uniontown folio, Pennsylvania*, U.S. Geological Survey Geologic Atlas of the U.S., Folio 82, 21 p.

Structure contours compiled by J. R. Shaulis from unpublished data; minor reference to Hickok and Moyer (1940) and Campbell (1902).

## COAL CROP LINES AND STRUCTURE CONTOURS

**FORT NECESSITY**



EXPLANATION

CROP LINES

hm

Harlem coal

bc

Brush Creek coal

uf

Upper Freeport coal

uk

Upper Kittanning coal

lk

Lower Kittanning coal



Anticline

Showing axial plane trace  
and direction of plunge.

-2000-

Structure contour  
Altitude of the top of the  
Upper Freeport coal, in feet  
above mean sea level. Contour  
interval 100 feet

MAP RELIABILITY  
Coal crop lines—fair  
to good  
Structure contours—  
fair to good



SOURCES

Crop lines modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser. County Report 26, 530 p.; and Jacobsen, E. F., and Lyons, P. C. (in preparation), *Coal geology of the Lower Youghiogheny coal field, Garrett County, Maryland*, U.S. Geological Survey.

Structure contours compiled by J. R. Shaulis from unpublished data; minor reference to Hickok and Moyer (1940) and Jacobsen and Lyons (in preparation).

SCALE ~1:125,000  
CONTOUR INTERVAL 20 FEET  
NATIONAL GEOGRAPHIC VERTICAL DATUM OF 1929

ROAD CLASSIFICATION  
Heavy duty  
Medium duty  
Unimproved dirt  
Interstate Route  
U. S. Route  
State Route

## COAL CROP LINES AND STRUCTURE CONTOURS

FRIENDSVILLE







EXPLANATION



Crop line of the  
Lower Freeport coal



Extent of known  
strip mining



SOURCES

Crop line modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map and on field checking.

UTM GRID AND 1976 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

CROP LINE AND MINED-OUT AREA OF THE  
LOWER FREEPORT COAL

LAKE LYNN



EXPLANATION

Crop line of the Upper Freeport coal

Extent of known strip mining



MAP RELIABILITY

Coal crop line—fair to good  
Limits of known strip mining—approximate

SOURCES

Crop line modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map and on field checking

SCALE IN MILES  
1 1000 2 2000 3 3000 4 4000 5 5000 6 6000 7 7000 FEET  
1 1000 2 2000 3 3000 4 4000 5 5000 6 6000 7 7000 METER

CONTOUR INTERVAL 20 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

ROAD CLASSIFICATION  
Medium-duty  
Light-duty

Improved dirt

Paved

State Route

Interstate

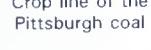
Highway

Local road

Lake Lynn  
CROP LINE AND MINED-OUT AREAS OF THE  
UPPER FREEPORT COAL



EXPLANATION



Extent of known strip mining



Extent of known deep mining



MAP RELIABILITY  
Coal crop line—very good

Limits of known strip mining—approximate

Limits of known deep mining—approximate

**SOURCES**  
Crop line compiled by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map.

Limits of deep mining from Pennsylvania Department of Environmental Resources, Bureau of Bituminous Mine Subsidence (1971), unpublished map.

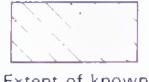
CROP LINE AND MINED-OUT AREAS OF THE  
PITTSBURGH COAL

LAKE LYNN



EXPLANATION

Crop line of the Redstone coal



Extent of known strip mining



CROP LINE AND MINED-OUT AREAS OF THE  
REDSTONE COAL







EXPLANATION

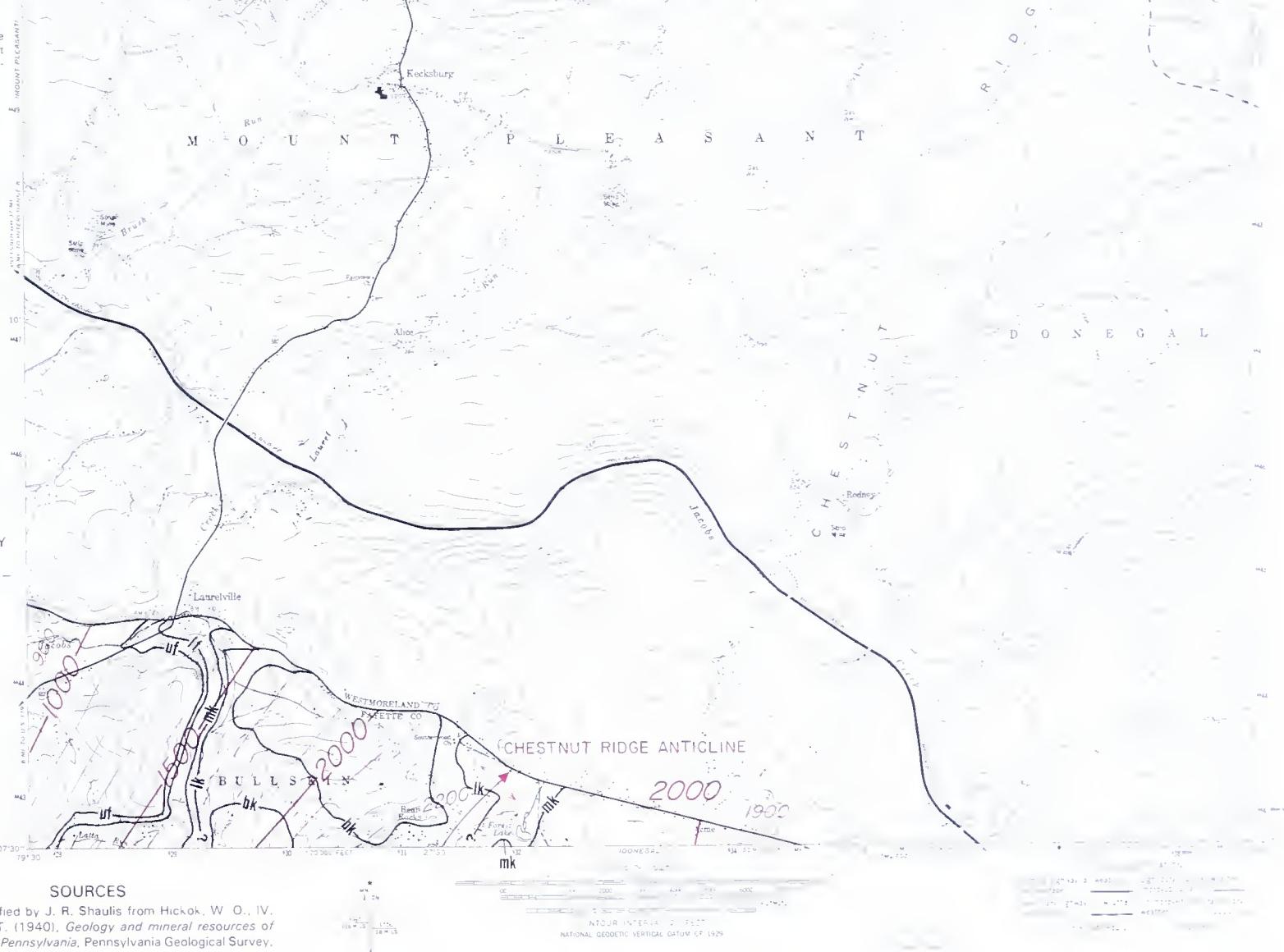
CROP LINES

- uf** Upper Freeport coal
- lf** Lower Freeport coal
- mk** Middle Kittanning coal
- lk** Lower Kittanning coal
- bk** Brookville coal

Anticline  
Showing axial-plane trace and direction of plunge.

**-2000-**

Structure contour  
Altitude of the top of the  
Upper Freeport coal, in feet  
above mean sea level. Contour  
interval 100 feet.



**COAL CROP LINES AND  
STRUCTURE CONTOURS**

**MAMMOTH**





EXPLANATION

Crop line of the Pittsburgh coal

Extent of known strip mining

Extent of known deep mining



MASONTOWN  
CROP LINE AND MINED-OUT AREAS OF THE  
PITTSBURGH COAL





## EXPLANATION

Crop line of the Redstone coal

Extent of known strip mining



## MAP RELIABILITY

Coal crop line—good

Limits of known strip

mining approximate

## SOURCES

Crop line slightly modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map.

MASONTOWN

CROP LINE AND MINED-OUT AREAS OF THE  
REDSTONE COAL

CONTOUR INTERVAL 20 FEET

NATIONAL GEOGRAPHIC VERTICAL DATUM OF 1929

UTM GRID AND 1:25 MAGNETIC NORTH

DECLINATION AT CENTER OF SHEET





EXPLANATION

Crop line of the Sewickley coal

Extent of known strip mining

Extent of known deep mining



MAP RELIABILITY

Coal crop line—good  
Limits of known strip mining—approximate  
Limits of known deep mining—approximate

SOURCES

Crop line slightly modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.  
Limits of strip mining based on interpretation of topographic map.  
Limits of deep mining from unpublished mine maps.

CONTOUR INTERVAL 20 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

MASONTOWN  
CROP LINE AND MINED-OUT AREAS OF THE  
SEWICKLEY COAL





EXPLANATION

Crop line of the Waynesburg coal

Extent of known strip mining



MAP RELIABILITY

Coal crop line—good  
Limits of known strip  
mining—approximate

SOURCES

Crop line slightly modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map.

CONTOUR INTERVAL 20 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

1 MILE = 1.625 KM  
1 KILOMETER = 0.621 MILE  
1 MILE = 1.609 KM  
1 KILOMETER = 0.621 MILE

MASONTOWN

CROP LINE AND MINED-OUT AREAS OF THE  
WAYNESBURG COAL





EXPLANATION

CROP LINES

— W —

Waynesburg coal

— S —

Sewickley coal

— T —

Redstone coal

— P —

Pittsburgh coal

— X —

Anticline

Showing axial-plane trace and direction of plunge.

— X —

Syncline

Showing axial-plane trace and direction of plunge.

-1000-

Structure contour

Altitude of the base of the Pittsburgh coal, in feet above mean sea level. Contour interval 20 feet

MAP RELIABILITY

Coal crop lines—good

to very good

Structure contours—

very good



SOURCES

Crop lines slightly modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), Geology and mineral resources of Fayette County, Pennsylvania, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Structure contours compiled by A. D. Glover (1976) from Hickok and Moyer (1940) and Kent, B. H. (1973), Geologic map of parts of the Masontown and Morgantown North quadrangles, Greene County, Pennsylvania, U.S. Geological Survey Miscellaneous Geologic Investigations Map I-743, scale 1:24,000.

UTM GRID AND 1970 MORGANTOWN NORTH ELLIMINATION AT CENTER OF SHEET  
1000' 0' 1000' 2000' 3000' 4000' 5000' 6000' 7000' 8000' 9000' 10000' FEET  
1000' 0' 1000' 2000' 3000' 4000' 5000' 6000' 7000' 8000' 9000' 10000' METERS  
CONTOUR INTERVAL 20 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

## COAL CROP LINES AND STRUCTURE CONTOURS

MASONTOWN



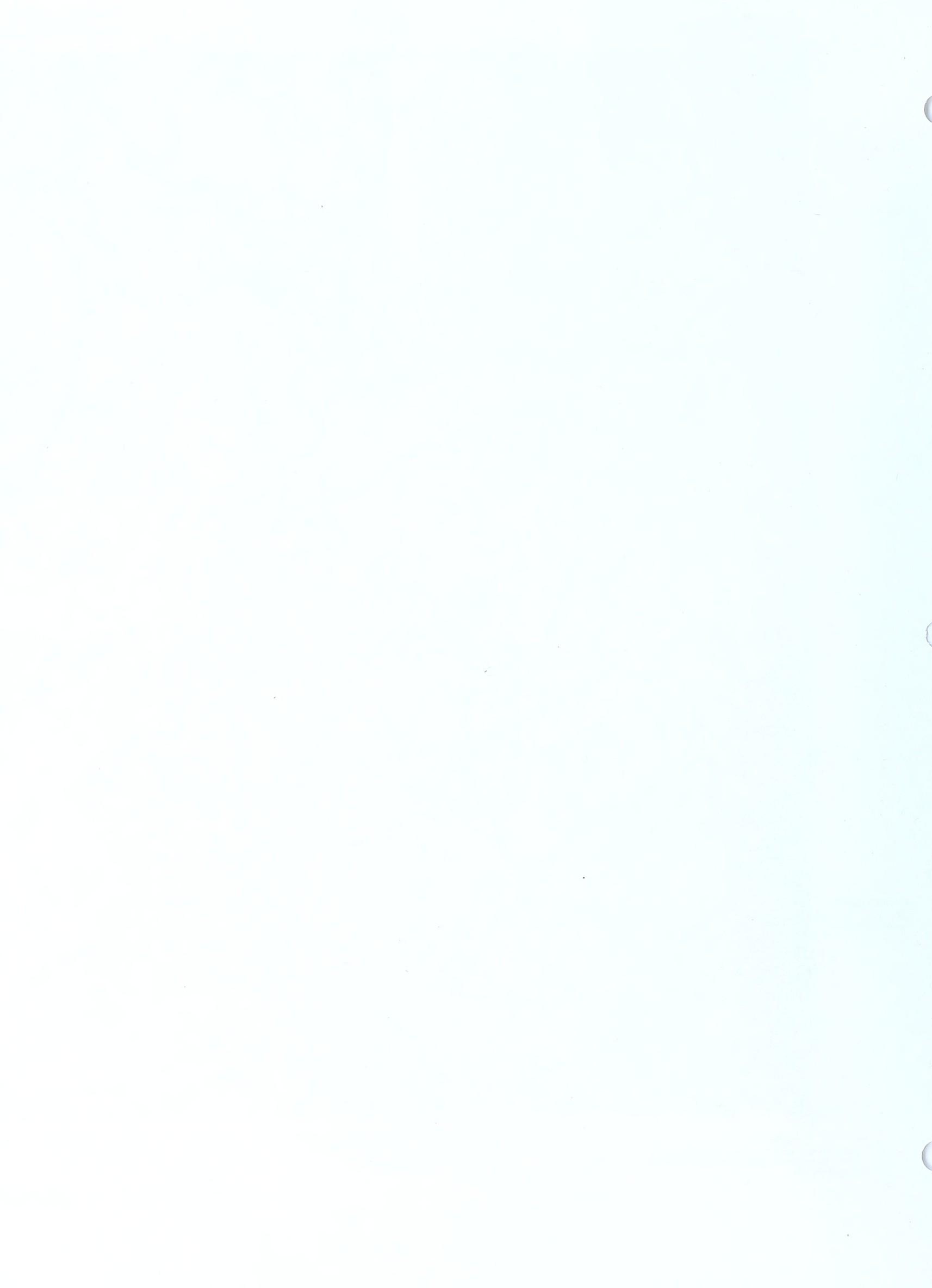


SOURCE

Limits of deep mining from Pennsylvania Department of Environmental Resources, Bureau of Bituminous Mine Subsidence (1971), unpublished map.

MINED-OUT AREA OF THE  
PITTSBURGH COAL

MATHER





SOURCE

Crop line slightly modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940). *Geology and mineral resources of Fayette County, Pennsylvania*. Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

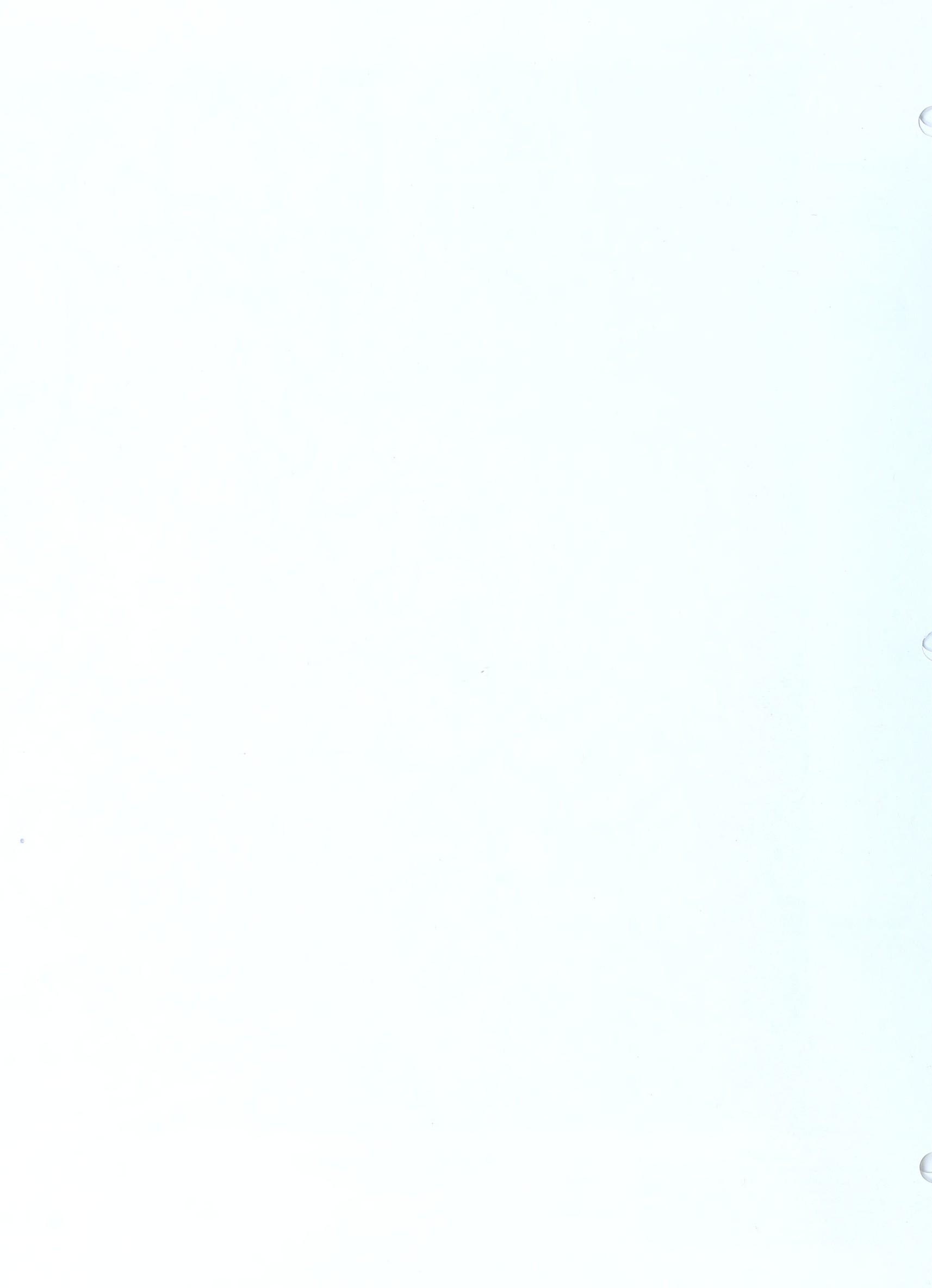
MATHER  
CROP LINE OF THE  
WAYNESBURG COAL





## COAL CROP LINE AND STRUCTURE CONTOURS

MATHER



EXPLANATION

Crop line of the Lower Kittanning coal

Extent of known strip mining

Extent of known deep mining



MAP RELIABILITY  
Coal crop line—poor  
to good  
Limits of known strip  
mining—approximate  
Limits of known deep  
mining—approximate

SOURCES

Crop line modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940). *Geology and mineral resources of Fayette County, Pennsylvania*. Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map and on field checking.

Limits of deep mining from unpublished mine maps.

SCALE ~1:62500

1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 KILOMETER

CONTOUR INTERVAL 20 FEET

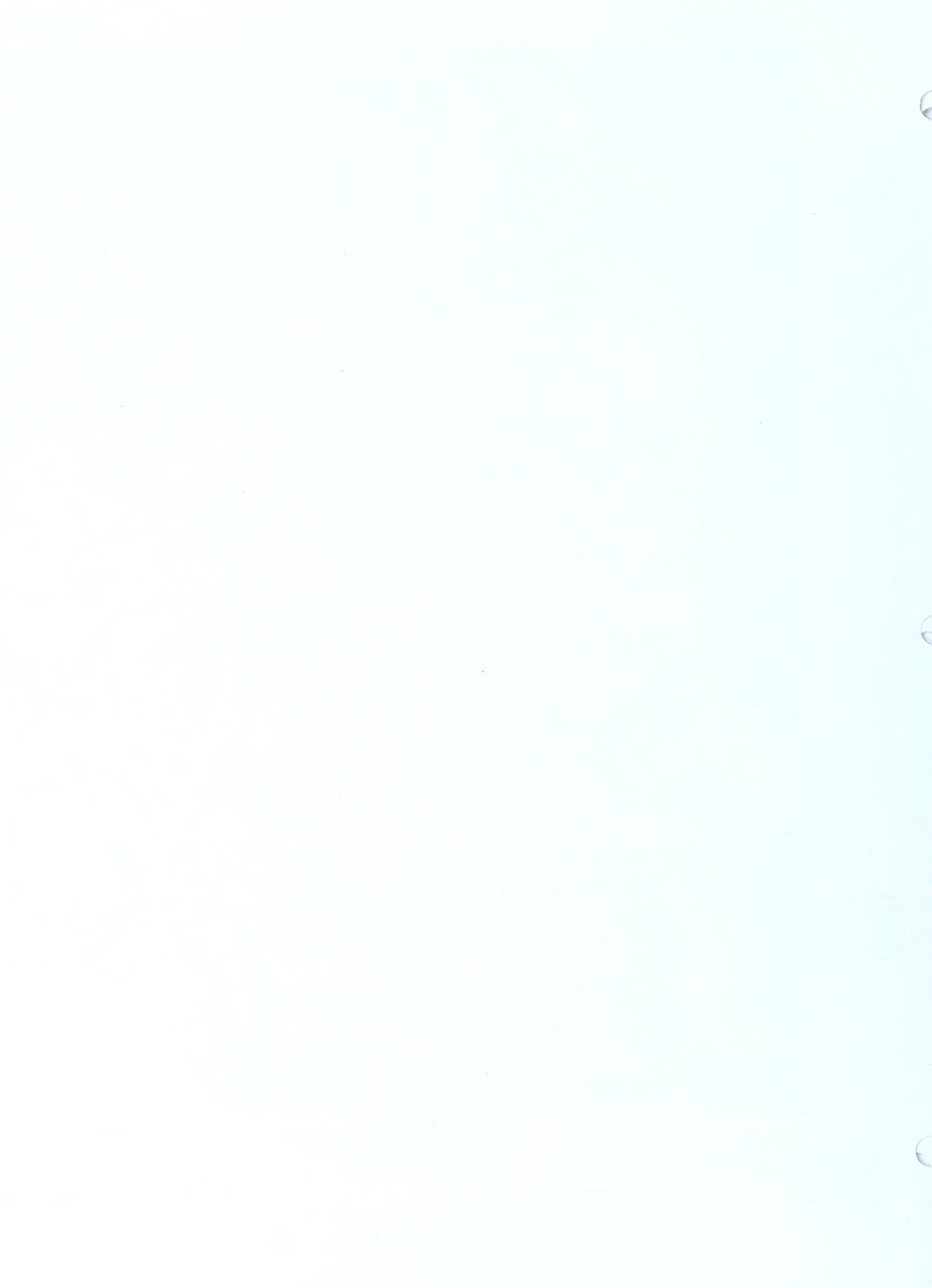
NATIONAL GEODETIC VERTICAL DATUM OF 1929

UTM GRID AND 1900 MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET

ROAD CLASSIFICATION  
Secondary highway, all weather, hard surface  
Light-duty road, all weather, improved surface  
Unpaved road, fair or dry weather  
State Route

PENNSYLVANIA  
QUADRANGLE LOCATION

MILL RUN  
CROP LINE AND MINED-OUT AREAS OF THE  
LOWER KITTANNING COAL



EXPLANATION

Crop line of the Lower Freeport coal

Extent of known strip mining

Extent of known deep mining

MAP RELIABILITY

Coal crop line—poor to good  
Limits of known strip mining—approximate  
Limits of known deep mining—approximate



SOURCES

Crop line modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map and on field checking

Limits of deep mining from unpublished mine maps.

CROP LINE AND MINED-OUT AREAS OF THE  
LOWER FREEPORT COAL

MILL RUN

ROAD CLASSIFICATION

Secondary highway	3. Weather: Light-duty load	4. Weather: Improved surface
Local road	5. Weather: Improved surface	6. Weather: Unimproved road, fair or dry weather
State Route	7. Weather: Unimproved road, wet weather	

PENNSYLVANIA  
VALUABLE LOCATION

CONTOUR INTERVAL 20 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

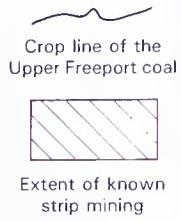
UTM GRID AND 1960 MAGNETIC NORTH  
DECRETION AT CENTER OF SHEET

1' 100' 1' 100' 1' 100' 1' 100'

1' 100' 1' 100' 1' 100' 1' 100'



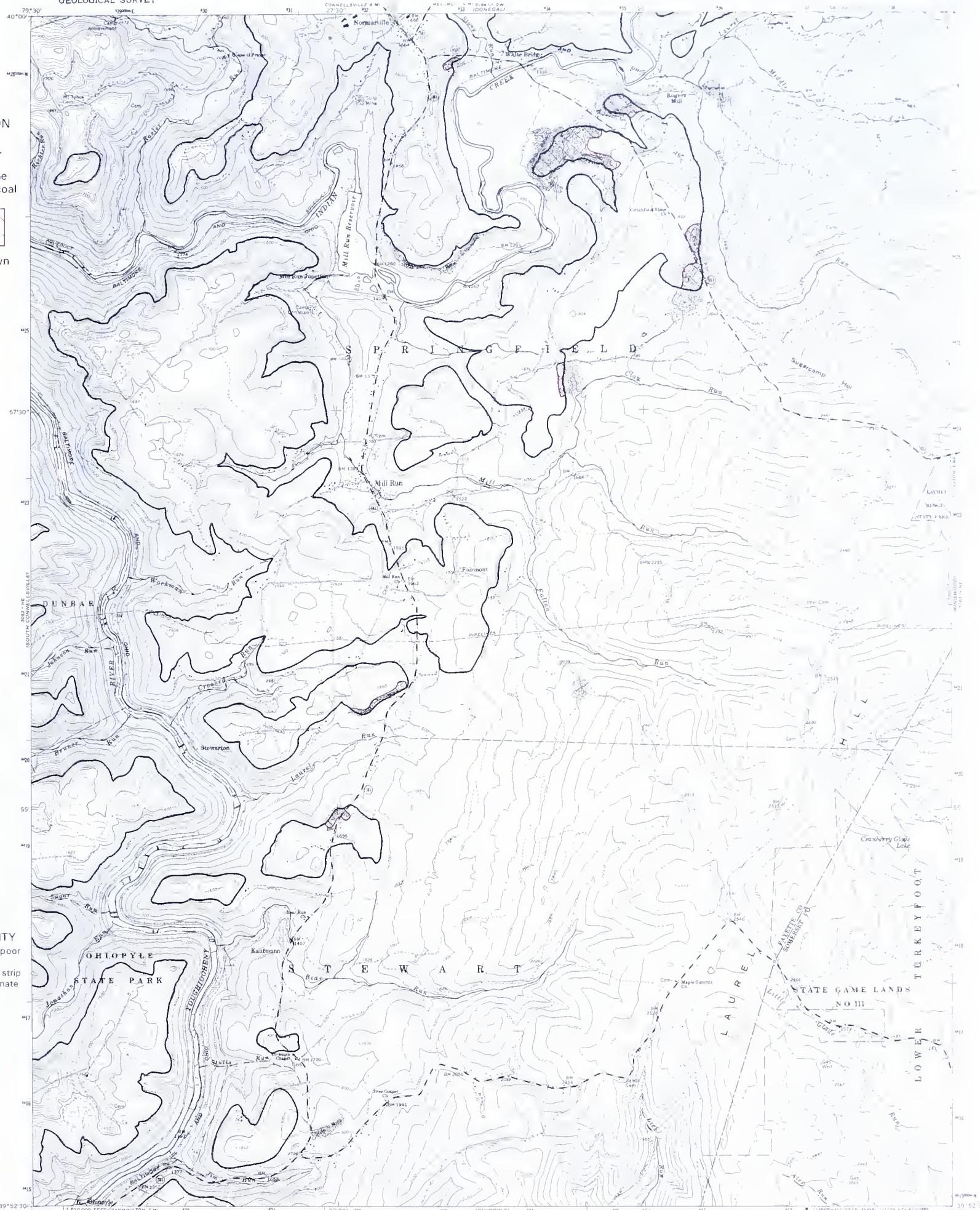
EXPLANATION



Crop line of the  
Upper Freeport coal

Extent of known  
strip mining

MAP RELIABILITY  
Coal crop line—poor  
to good  
Limits of known strip  
mining—approximate



SOURCES

Crop line modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map and on field checking.

SCALE ~1:62500  
CONTOUR INTERVAL 20 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929  
UTM GRID AND 1960 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET  
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET  
1000 0 1000 2000 3000 4000 5000 6000 7000 METERS  
1 MILE  
1.6 KILOMETERS  
ROAD CLASSIFICATION  
Secondary highway all weather, Light-duty road all weather, hard surface  
Unpaved road, fair or dry weather  
State Route



MILL RUN

CROP LINE AND MINED-OUT AREAS OF THE  
UPPER FREEPORT COAL



## EXPLANATION

- CROP LINES

Upper Freeport coal

Lower Freeport coal

Upper Kittanning coal

Middle Kittanning coal

Lower Kittanning coal

Clarion coal

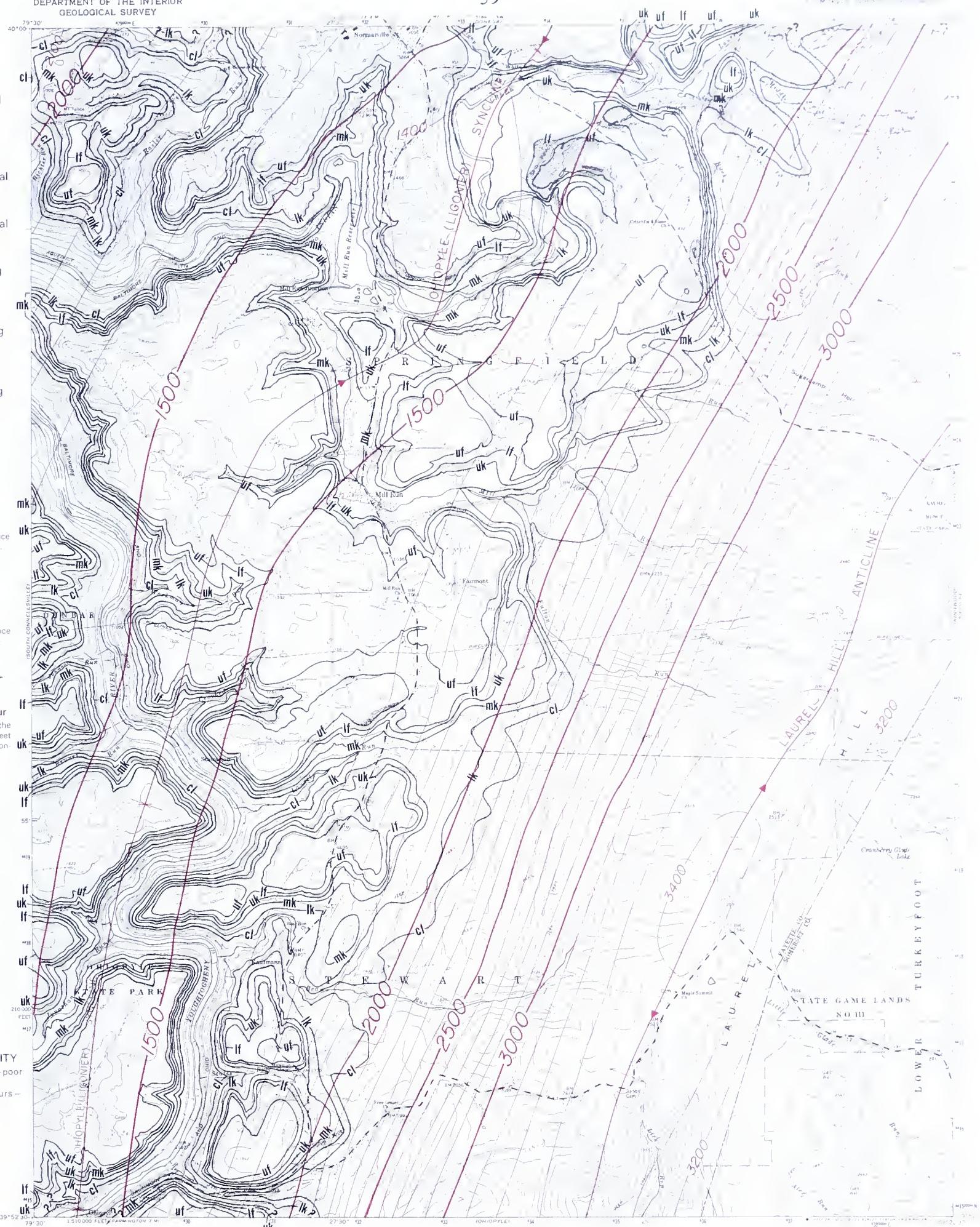
Anticline

Syncline

**-2000-**

MAP RELIABILITY

Coal crop lines—poor  
to good  
Structure contours—  
contoured



## SOURCES

Crop lines modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey.

4th ser., County Report 26, 530 p.  
Structure contours compiled by J. R. Shaulis from unpublished data. Minor reference to Hickok and Moyer (1940); Shaffner, M. N. (1963), *Geology and mineral resources of the Donegal quadrangle, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Atlas 48, 116 p.; and unpublished map by W. E. Edmunds (1976).

1 GN  
60°  
136 MILS | 300'  
18 MILS

## COAL CROP LINES AND STRUCTURE CONTOURS

ROAD CLASSIFICATION

```

graph TD
    SH[Secondary highway  
hard surface] --- LDR[Light-duty road  
improved surface]
    SH --- UR[Unimproved road  
weather]
    SH --- SR[State Route]
    LDR --- UR
    LDR --- SR
    UR --- SR
  
```

## MILL RUN



EXPLANATION

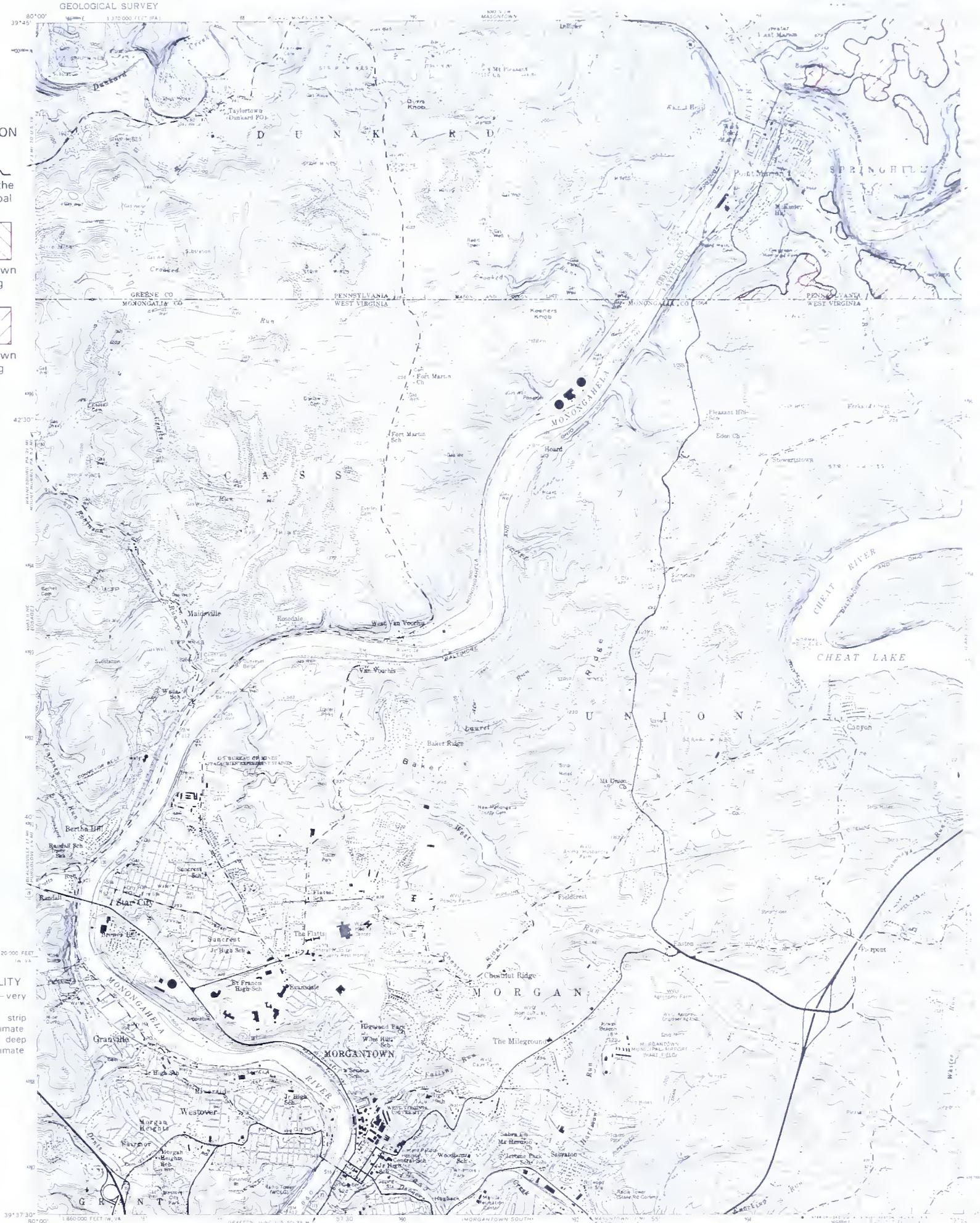
Crop line of the Pittsburgh coal



Extent of known strip mining



Extent of known deep mining



MAP RELIABILITY  
Coal crop line—very good  
Limits of known strip mining—approximate  
Limits of known deep mining—approximate

SOURCES

Crop line compiled by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940). *Geology and mineral resources of Fayette County, Pennsylvania*. Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map.

Limits of deep mining from Pennsylvania Department of Environmental Resources, Bureau of Bituminous Mine Subsidence (1971), unpublished map.

UTM GRID AND 1975 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

CROP LINE AND MINED-OUT AREAS OF THE  
**PITTSBURGH COAL**

**MORGANTOWN  
NORTH**





#### SOURCES

Crop line compiled by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Structure contours compiled by A. D. Glover (1976) from Hickok and Moyer (1940) and Kent, B. H. (1973), *Geologic map of parts of the Masontown and Morgantown North quadrangles, Greene County, Pennsylvania*, U.S. Geological Survey Miscellaneous Geologic Investigations Map I-743, scale 1:24,000.

## COAL CROP LINE AND STRUCTURE CONTOURS

MORGANTOWN  
NORTH



EXPLANATION

-1000-

Structure contour  
Altitude of the top of the  
Upper Freeport coal, in feet  
above mean sea level. Contour  
interval 100 feet



MAP RELIABILITY  
Structure contours—  
poor to fair

SOURCE

Structure contours modified by J. R. Shaulis from Hickok,  
W. O., IV, and Moyer, F. T. (1940), Geology and mineral  
resources of Fayette County, Pennsylvania, Pennsylvania  
Geological Survey, 4th ser., County Report 26, 530 p.

MOUNT PLEASANT

STRUCTURE CONTOURS



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

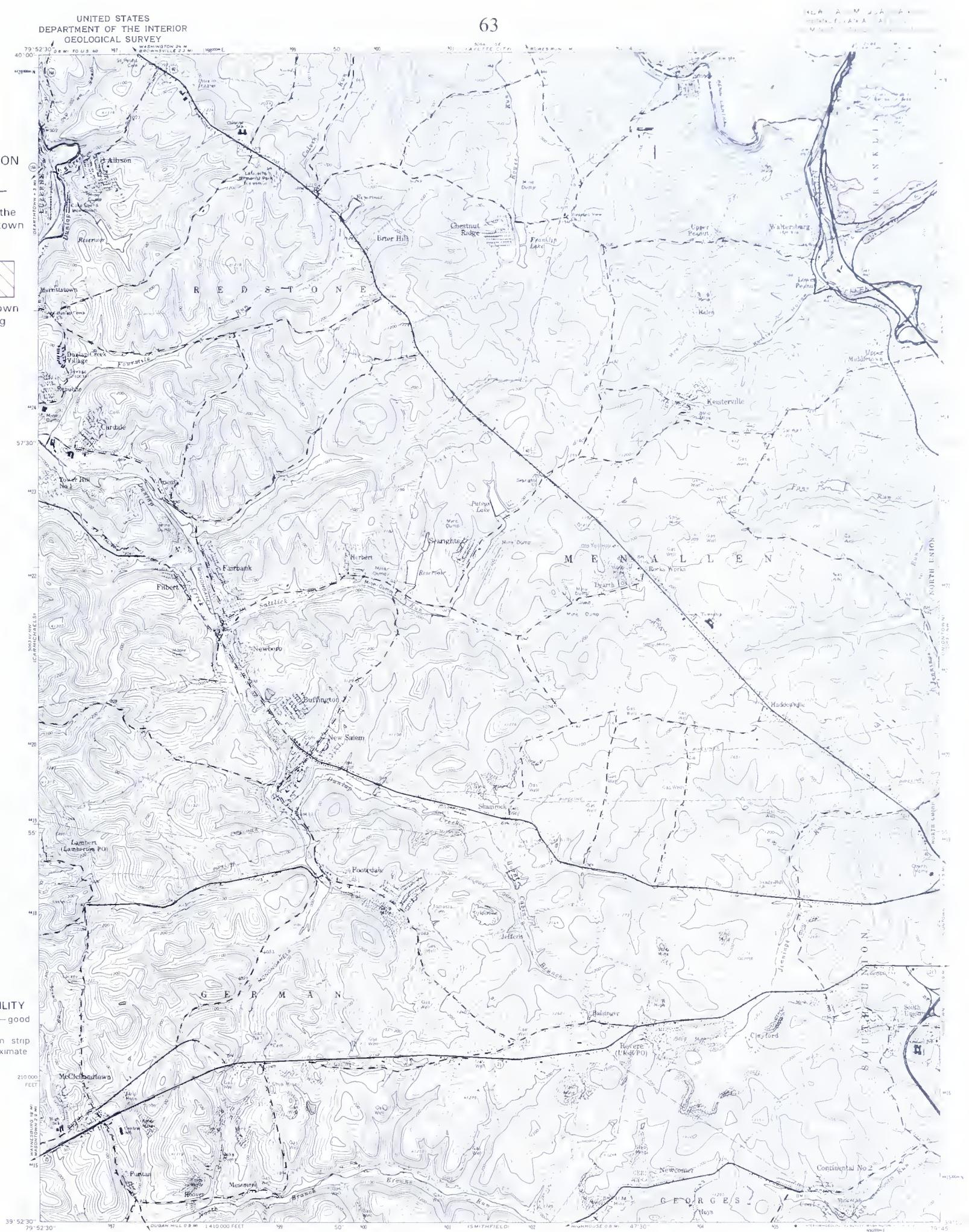
## EXPLANATION



Crop line of the  
Lower Bakerstown  
coal



### Extent of known strip mining



## SOURCES

Crop line compiled by J. R. Shaulis from unpublished data; minor reference to Hickok, W. O., IV, and Moyer, F. T. (1940). *Geology and mineral resources of Fayette County, Pennsylvania*. Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p. Limits of strip mining based on interpretation of topographic map and on field checking.

A diagram showing a vertical vector labeled 'Gm' pointing upwards. The vector has a horizontal component to its right.

# CROP LINE AND MINED OUT AREAS OF THE LOWER BAKERSTOWN COAL

NEW SALEM

ROAD CLASSIFICATION  
Heavy duty \_\_\_\_\_ Light duty \_\_\_\_\_  
Medium-duty ----- Unimproved dirt  
 US Route  State Route

PENNSYLVANIA



EXPLANATION

Crop line of the Pittsburgh coal

Extent of known strip mining

Extent of known deep mining



MAP RELIABILITY

Coal crop line—very good

Limits of known strip mining—approximate

Limits of known deep mining—approximate

SOURCES

Crop line compiled by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map.

Limits of deep mining from Pennsylvania Department of Environmental Resources, Bureau of Bituminous Mine Subsidence (1971), unpublished map.

CROP LINE AND MINED-OUT AREAS OF THE  
PITTSBURGH COAL

NEW SALEM

UTM GRID AND 1973 MAGNETIC NORTH  
DECOMMENDED AT CENTER OF SHEET

1000 0 1000 2000 3000 4000 5000 6000 FEET  
CONTOUR INTERVAL 20 FEET  
DATUM IS MEAN SEA LEVEL

PENNSYLVANIA  
QUADRANGLE, SHEET 1

NAD CLASSIFICATION  
1973  
MAGNETIC  
1973  
1973  
1973  
1973

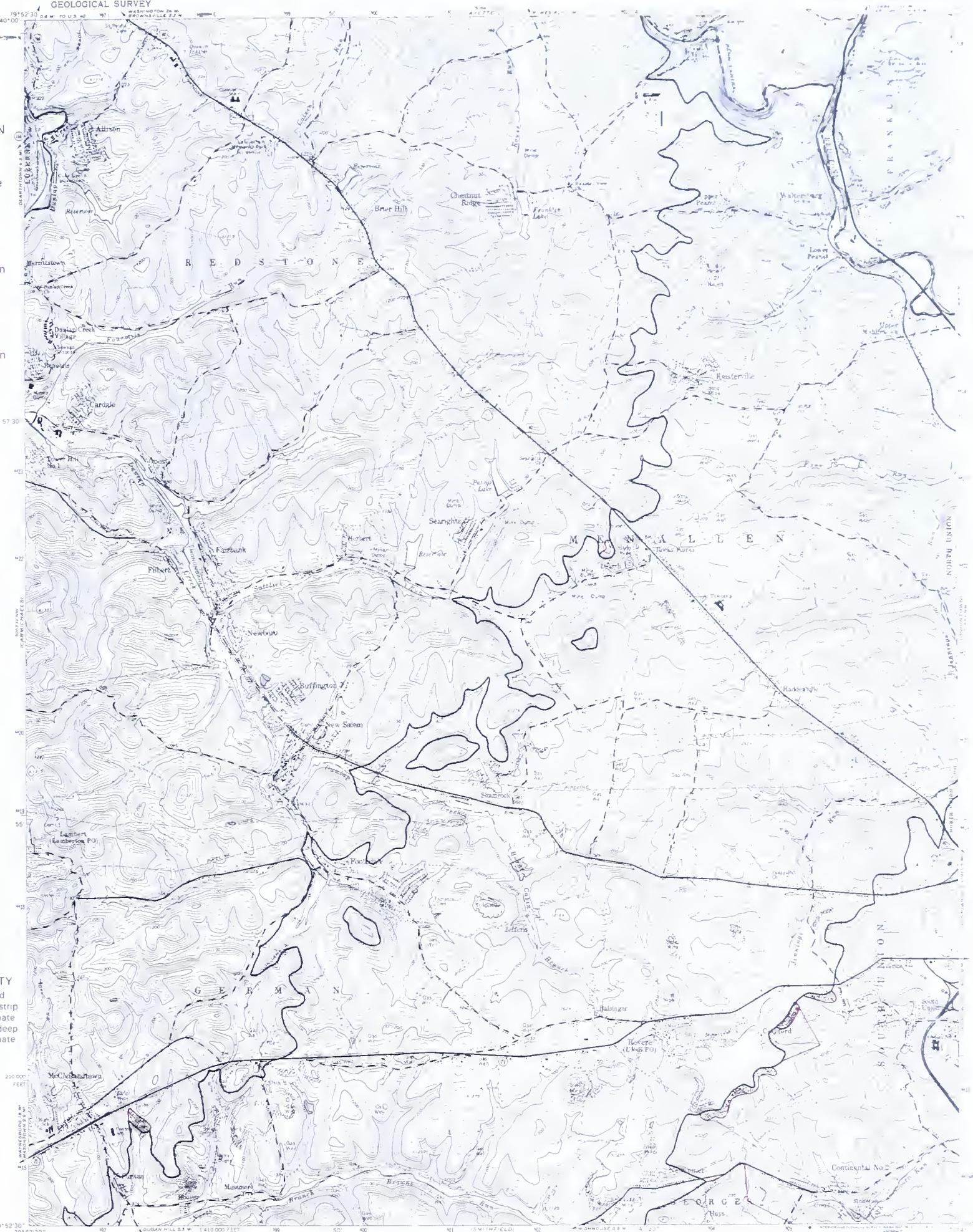


EXPLANATION

Crop line of the Sewickley coal

Extent of known strip mining

Extent of known deep mining



MAP RELIABILITY

Coal crop line—good  
Limits of known strip mining—approximate  
Limits of known deep mining—approximate

SOURCES

Crop line slightly modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940). *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map.

Limits of deep mining from unpublished mine maps.

ROAD CLASSIFICATION

CONTOUR INTERVAL 20 FEET

DATUM IS MEAN SEA LEVEL

NEW SALEM

CROP LINE AND MINED-OUT AREAS OF THE  
SEWICKLEY COAL

UTM GRID AND 1973 MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET



EXPLANATION

CROP LINES

—W—  
Washington coal

—WB—  
Waynesburg coal

—S—  
Sewickley coal

—T—  
Redstone coal

—P—  
Pittsburgh coal

—LB—  
Lower Bakerstown coal

↗ Anticline  
Showing axial-plane trace and direction of plunge

↖ Syncline  
Showing axial-plane trace and direction of plunge

—500 P—  
Base of Pittsburgh coal

—700 UF—  
Top of Upper Freeport coal

Structure contours

Altitudes in feet above mean sea level. Contour interval 100 feet

MAP RELIABILITY  
Coal crop lines—good to very good  
Structure contours—good to very good



SOURCES

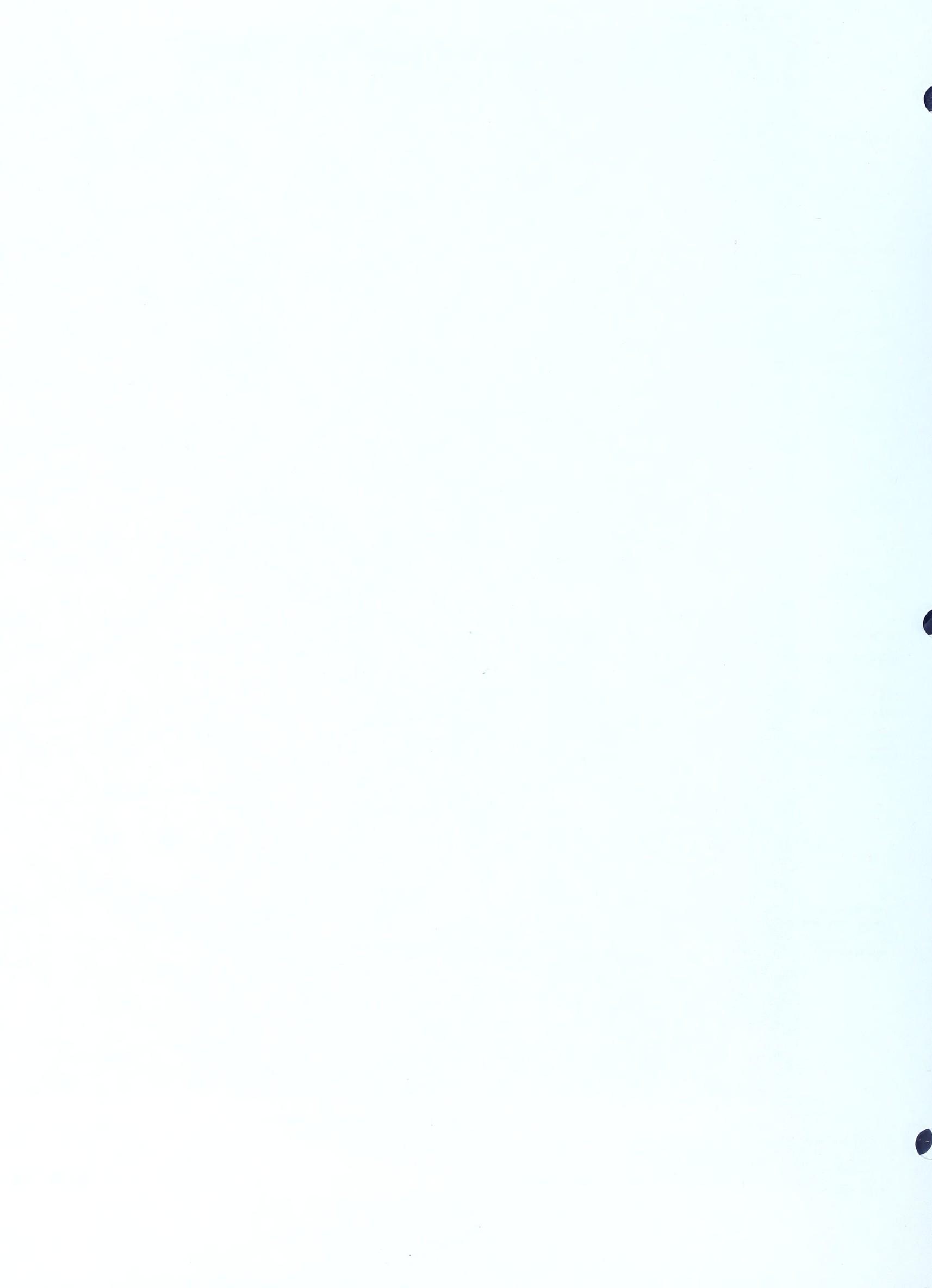
Crop lines slightly modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.  
Structure contours compiled by A. D. Glover (1976) from Hickok and Moyer (1940).

NEW GRID AND 1973 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET  
44° 45' 30" N  
79° 52' 30" W  
1000 0 1000 2000 3000 4000 5000 6000 FEET  
CONTOUR INTERVAL 20 FEET  
DATUM IS MEAN SEA LEVEL

## COAL CROP LINES AND STRUCTURE CONTOURS

NEW SALEM

ROAD CLASSIFICATION  
Heavy-duty  
Medium-duty  
Light-duty  
Unpaved dirt  
L.S. Route  
State Route



EXPLANATION

Crop line of the Lower Kittanning coal

Extent of known strip mining



MAP RELIABILITY  
Coal crop line—poor  
to fair  
Limits of known strip  
mining—approximate

SOURCES

Crop line modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map and on field checking.

UTM GRID AND 1973 MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET

CROP LINE AND MINED-OUT AREAS OF THE  
LOWER KITTANNING COAL

1 1000 0 1000 2000 3000 4000 5000 6000 FEET

CONTOUR INTERVAL 20 FEET  
DATA IN S. MEAN SEA LEVEL

ROAD CLASSIFICATION	
Primary highway all weather hard surface	Light-duty road all weather improved surface
Secondary highway all weather hard surface	Unimproved road 1a or 1b weather
U.S. Route	State Route

OHIOPOLE



EXPLANATION

 Crop line of the Upper Kittanning coal

 Extent of known deep mining



MAP RELIABILITY  
Coal crop line—poor  
Limits of known deep  
mining—approximate

SOURCES

Crop line modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.  
Limits of deep mining from unpublished mine maps.

UTM GRID AND 1973 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

1 1000 0 1000 2000 3000 4000 5000 6000 1000 FEET  
CONTOUR INTERVAL 20 FEET  
CARTH IS MEAN SEA LEVEL

ROAD CLASSIFICATION  
Primary highway all weather, hard surface  
Secondary highway, all weather, unimproved road, fair or dry weather, hard surface

U. S. Route

State Route

OHIOPOLE

CROP LINE AND MINED-OUT AREA OF THE  
UPPER KITTANNING COAL



**SOURCES**

Crop lines modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Structure contours compiled by J. R. Shaulis from unpublished data; minor reference to Hickok and Moyer (1940) and unpublished map by W. E. Edmunds (1976).

UTM GRID AND 1971 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

## COAL CROP LINES AND STRUCTURE CONTOURS

SCALE 1:250,000  
CONTOUR INTERVAL, 20 FEET  
DATUM IS MEAN SEA LEVEL

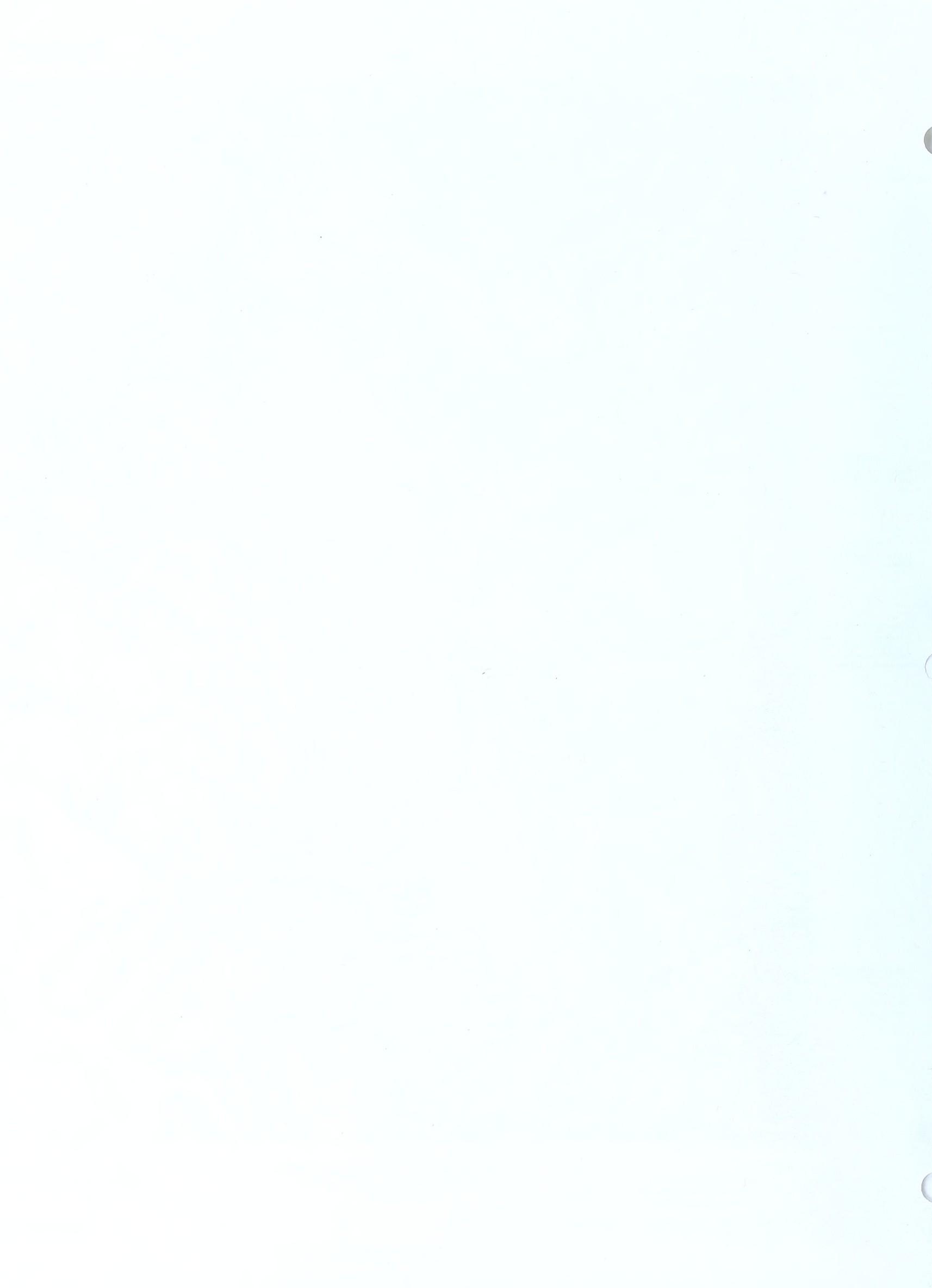
ROAD CLASSIFICATION

Primary highway, all weather	Light-duty road, all weather
Hard surface	Improved surface
Secondary highway, all weather	Unimproved road, fair or dry
Hard surface	weather

U.S. Route State Route

PENNSYLVANIA  
QUADRANGLE LOCATION

OHIOPOLE



EXPLANATION

 Crop line of the Middle Kittanning coal

 Extent of known deep mining



MAP RELIABILITY

Coal crop line—fair to good  
Limits of known deep mining—approximate

SOURCES

Crop line modified by J. R. Shaulis from Shaffner, M. N. (1963), *Geology and mineral resources of the Donegal quadrangle, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Atlas 48, 116 p.

Limits of deep mining from Shaffner (1963) and unpublished mine maps.

UTM GRID AND 1981 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

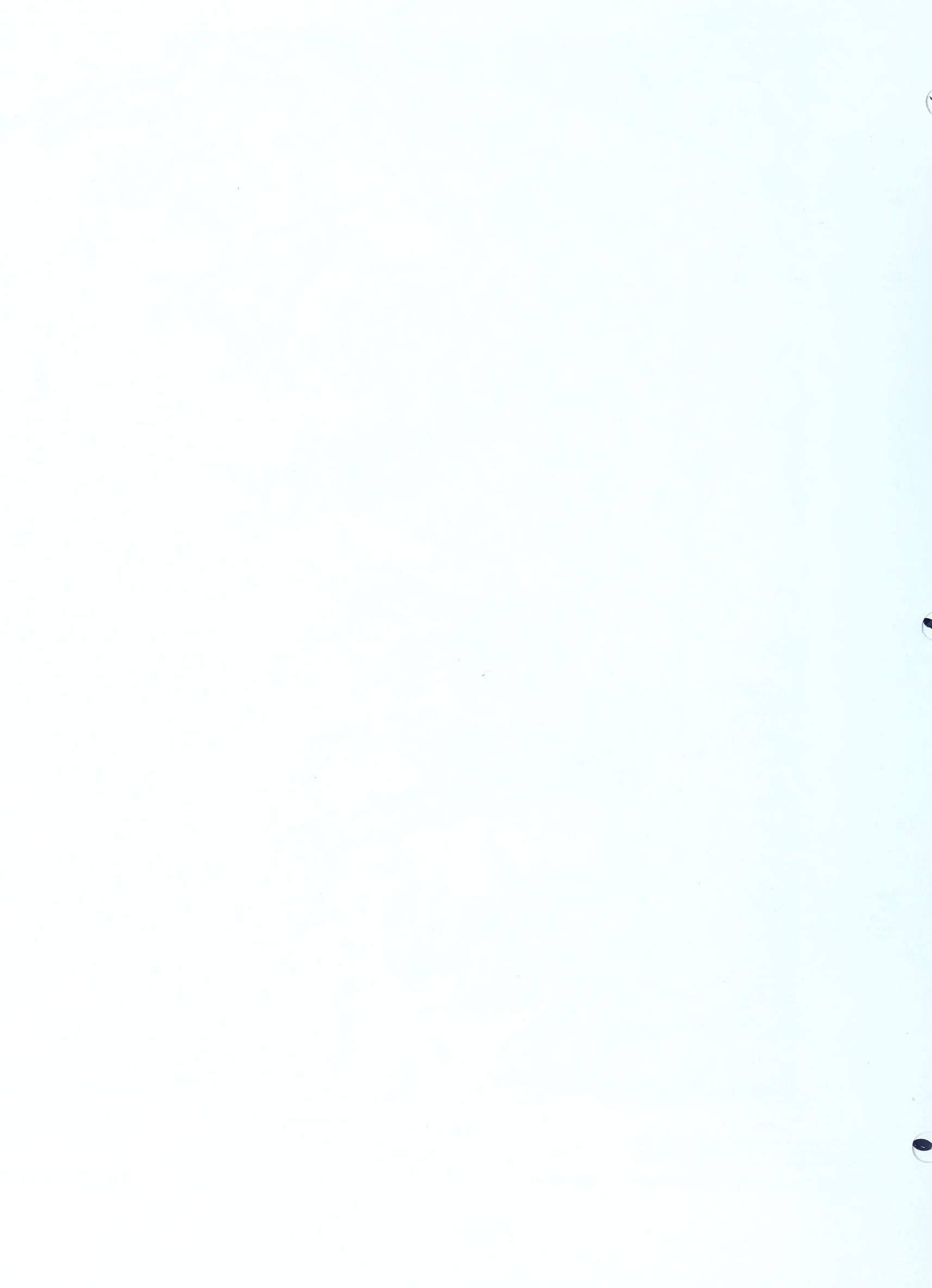
CONTOUR INTERVAL 20 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

PENNSYLVANIA  
QUADRANGLE LOCATION

ROAD CLASSIFICATION	
Primary highway, all weather hard surface	Light-duty road, all weather improved surface
Secondary highway, all weather hard surface	Unimproved road, fair or dry weather
Interstate Route	State Route

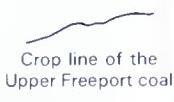
SEVEN SPRINGS

CROP LINE AND MINED OUT AREA OF THE  
MIDDLE KITTANNING COAL





EXPLANATION



Crop line of the  
Upper Freeport coal



Extent of known  
strip mining

MAP RELIABILITY  
Coal crop line—fair  
to good  
Limits of known strip  
mining—approximate

SOURCES

Crop line modified by J. R. Shaulis from Shaffner, M. N. (1963), *Geology and mineral resources of the Donegal quadrangle, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Atlas 48, 116 p.

Limits of strip mining based on interpretation of topographic map.

CROP LINE AND MINED OUT AREA OF THE  
UPPER FREEPORT COAL

UTM GRID AND 1981 MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET

CONTOUR INTERVAL 20 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

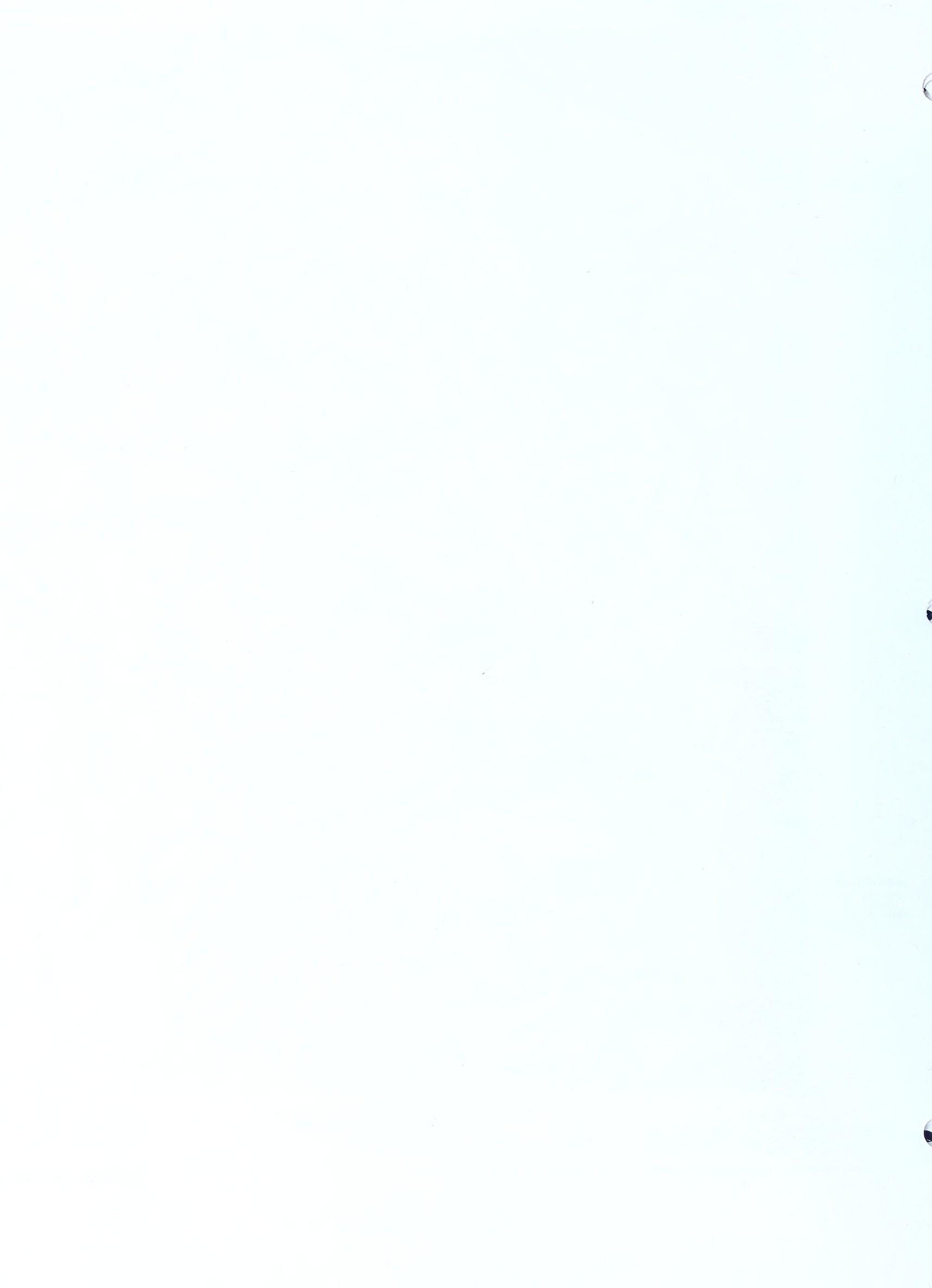
STATE & COUNTY LINES

ROAD CLASSIFICATION

Primary highway, all weather, hard surface	Light-duty road, all weather, improved surface
Secondary highway, all weather, hard surface	Unimproved road, fair or dry weather
Interstate Route	State Route

PENNSYLVANIA  
QUADRANGLE LOCATION

SEVEN SPRINGS



EXPLANATION

CROP LINES

Upper Freeport coal

Upper Kittanning coal

Middle Kittanning coal

Brookville coal

Syncline  
Showing axial-plane trace and direction of plunge.

-2000-

Structure contour  
Altitude of the top of the  
Upper Freeport coal, in feet  
above mean sea level, Con-  
tour interval 100 feet



MAP RELIABILITY  
Coal crop lines—fair  
to good  
Structure contours—  
fair to good

SOURCES

Crop lines modified by J. R. Shaulis from Shaffner, M. N. (1963), *Geology and mineral resources of the Donegal quadrangle, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Atlas 48, 116 p.

Structure contours compiled by J. R. Shaulis from unpublished data, minor reference to Shaffner (1963) and unpublished map by W. E. Edmunds (1976).

SCALE 1:625,000

CONTOUR INTERVAL 20 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

UTM GRID AND 1983 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

ROAD CLASSIFICATION

Primary highway, all weather hard surface	Light duty road, all weather improved surface
Secondary highway, all weather hard surface	Unimproved road, fair to dry weather
Interstate Route	
State Route	

PA 44A

PA 44B

PA 44C

PA 44D

PA 44E

PA 44F

PA 44G

PA 44H

PA 44I

PA 44J

PA 44K

PA 44L

PA 44M

PA 44N

PA 44O

PA 44P

PA 44Q

PA 44R

PA 44S

PA 44T

PA 44U

PA 44V

PA 44W

PA 44X

PA 44Y

PA 44Z

PA 44AA

PA 44AB

PA 44AC

PA 44AD

PA 44AE

PA 44AF

PA 44AG

PA 44AH

PA 44AI

PA 44AJ

PA 44AK

PA 44AL

PA 44AM

PA 44AN

PA 44AO

PA 44AP

PA 44AQ

PA 44AR

PA 44AS

PA 44AT

PA 44AU

PA 44AV

PA 44AW

PA 44AX

PA 44AY

PA 44AZ

PA 44BA

PA 44BB

PA 44BC

PA 44BD

PA 44BE

PA 44BF

PA 44BG

PA 44BH

PA 44BI

PA 44BJ

PA 44BK

PA 44BL

PA 44BM

PA 44BN

PA 44BO

PA 44BP

PA 44AQ

PA 44AR

PA 44AS

PA 44AT

PA 44AU

PA 44AV

PA 44AW

PA 44AX

PA 44AY

PA 44AZ

PA 44BA

PA 44BB

PA 44BC

PA 44BD

PA 44BE

PA 44BF

PA 44BG

PA 44BH

PA 44BI

PA 44BJ

PA 44BK

PA 44BL

PA 44BM

PA 44BN

PA 44BO

PA 44BP

PA 44AQ

PA 44AR

PA 44AS

PA 44AT

PA 44AU

PA 44AV

PA 44AW

PA 44AX

PA 44AY

PA 44AZ

PA 44BA

PA 44BB

PA 44BC

PA 44BD

PA 44BE

PA 44BF

PA 44BG

PA 44BH

PA 44BI

PA 44BJ

PA 44BK

PA 44BL

PA 44BM

PA 44BN

PA 44BO

PA 44BP

PA 44AQ

PA 44AR

PA 44AS

PA 44AT

PA 44AU

PA 44AV

PA 44AW

PA 44AX

PA 44AY

PA 44AZ

PA 44BA

PA 44BB

PA 44BC

PA 44BD

PA 44BE

PA 44BF

PA 44BG

PA 44BH

PA 44BI

PA 44BJ

PA 44BK

PA 44BL

PA 44BM

PA 44BN

PA 44BO

PA 44BP

PA 44AQ

PA 44AR

PA 44AS

PA 44AT

PA 44AU

PA 44AV

PA 44AW

PA 44AX

PA 44AY

PA 44AZ

PA 44BA

PA 44BB

PA 44BC

PA 44BD

PA 44BE

PA 44BF

PA 44BG

PA 44BH

PA 44BI

PA 44BJ

PA 44BK

PA 44BL

PA 44BM

PA 44BN

PA 44BO

PA 44BP

PA 44AQ

PA 44AR

PA 44AS

PA 44AT

PA 44AU

PA 44AV

PA 44AW

PA 44AX

PA 44AY

PA 44AZ

PA 44BA

PA 44BB

PA 44BC

PA 44BD

PA 44BE

PA 44BF

PA 44BG

PA 44BH

PA 44BI

PA 44BJ

PA 44BK

PA 44BL

PA 44BM

PA 44BN

PA 44BO

PA 44BP

PA 44AQ

PA 44AR

PA 44AS

PA 44AT

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PA 44AV

PA 44AW

PA 44AX

PA 44AY

PA 44AZ

PA 44BA

PA 44BB

PA 44BC

PA 44BD

PA 44BE





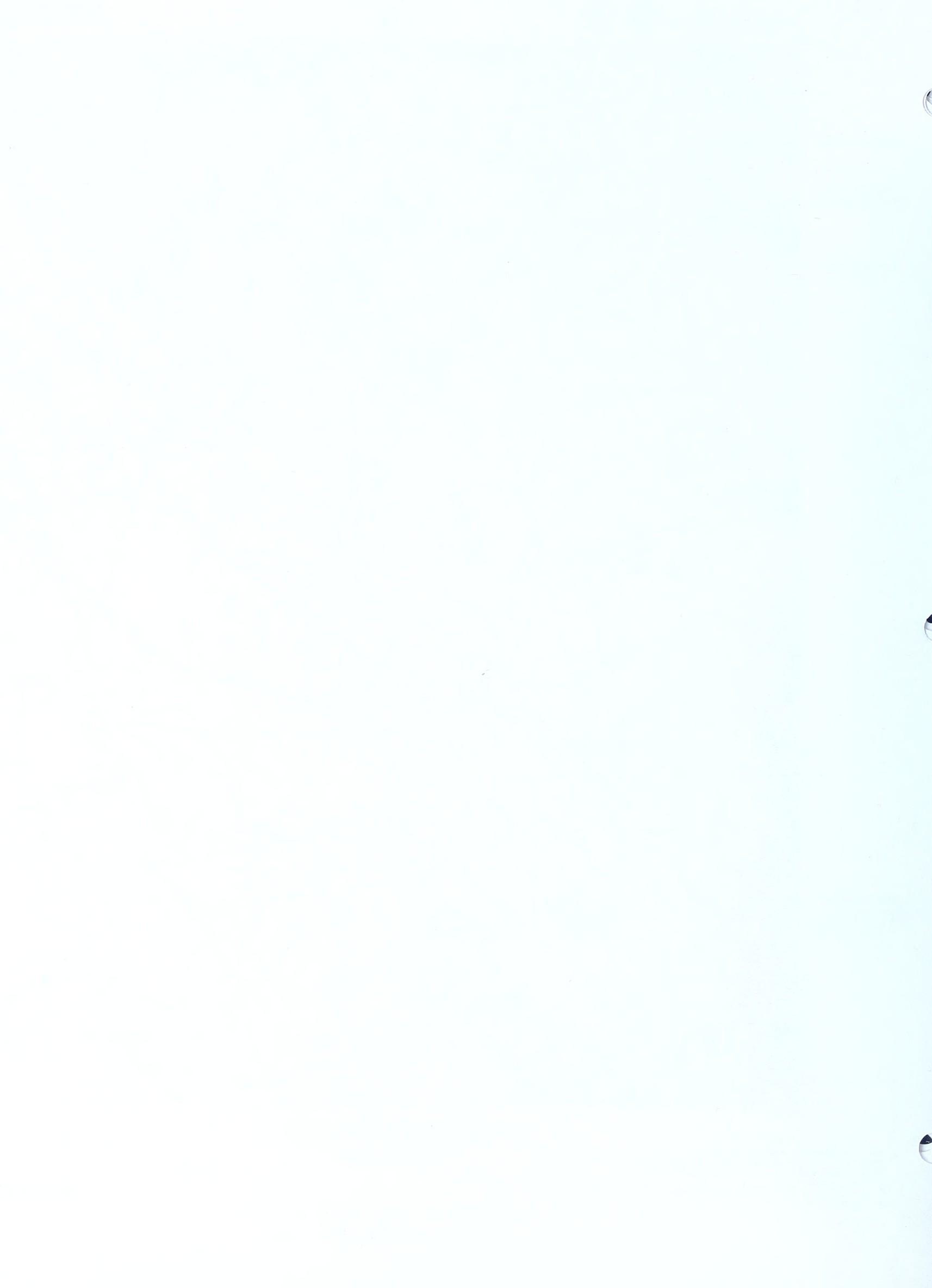
EXPLANATION

Crop line of the Upper Freeport coal

Extent of known strip mining



CROP LINE AND MINED-OUT AREAS OF THE  
UPPER FREEPORT COAL



EXPLANATION

Crop line of the Pittsburgh coal

Extent of known strip mining

Extent of known deep mining



MAP RELIABILITY

Coal crop line—very good  
Limits of known strip mining—approximate  
Limits of known deep mining—approximate

SOURCES

Crop line compiled by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940). *Geology and mineral resources of Fayette County, Pennsylvania*. Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map.

Limits of deep mining from Pennsylvania Department of Environmental Resources, Bureau of Bituminous Mine Subsidence (1971), unpublished map.

UTM GRID AND 1979 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

C. INTOUR INTERVAL 20 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

ROAD CLASSIFICATION

Highway

Local

U.S. Rte.

State Rte.

County Rte.

Muni. Rte.

Local

Private

Other

SMITHFIELD  
CROP LINE AND MINED-OUT AREAS OF THE  
PITTSBURGH COAL





## EXPLANATION

Crop line of the  
Redstone coal

Extent of known strip mining

### Extent of known strip mining



## SOURCES

Crop line slightly modified by J. R. Shaulis from Hickok, W. O., IV., and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey.

Fayette County, Pennsylvania, Pennsylvania Geological Survey.  
4th ser., County Report 26, 530 p.  
Limits of strip mining based on interpretation of topographic  
map.

UTM GRID AND 1979 MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET

CONTOUR INTERVAL 20 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

—  
—  
—

— UFGWZ >

U.S. Route

**SMITHFIELD**

# CROP LINE AND MINED-OUT AREAS OF THE REDSTONE COAL





## EXPLANATION

Crop line of the Sewickley coal

Extent of known strip mining

Extent of known deep mining



## MAP RELIABILITY

Coal crop line—good  
Limits of known strip mining—approximate  
Limits of known deep mining—approximate

## SOURCES

Crop line slightly modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map.

Limits of deep mining from unpublished mine maps.

CONTOUR INTERVAL 20 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

SMITHFIELD

CROP LINE AND MINED-OUT AREAS OF THE  
SEWICKLEY COAL





EXPLANATION

CROP LINES

- wb Waynesburg coal
- S Sewickley coal
- r Redstone coal
- p Pittsburgh coal
- uf Upper Freeport coal
- lf Lower Freeport coal
- uk Upper Kittanning coal
- lk Lower Kittanning coal
- bk Brookville coal

Anticline  
Showing axial-plane trace and direction of plunge.

Syncline  
Showing axial-plane trace and direction of plunge.

-1000 P -  
Base of Pittsburgh coal

-2000 UF -  
Top of Upper Freeport coal

-1500 B -  
Top of Burgon Sandstone

Structure contours  
Altitudes in feet above mean sea level. Contour interval 100 feet.

MAP RELIABILITY  
Coal crop lines—fair to very good  
Structure contours—fair to very good



SOURCES

Crop lines modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Structure contours on top of Upper Freeport coal compiled by J. R. Shaulis from unpublished data, minor reference to Hickok and Moyer (1940) and unpublished map by W. E. Edmunds (1976). Structure contours on base of Pittsburgh coal compiled by A. D. Glover (1976) from Hickok and Moyer (1940).

## COAL CROP LINES AND STRUCTURE CONTOURS

SMITHFIELD

ROAD CLASSIFICATION  
FED.—PA. —Light-duty  
Md.—July —Imperial ZONE  
U.S. Route

CONTOUR INTERVAL 20 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

UTM GRID AND 1979 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

1000 0 1000 2000 4000 6000 8000 10000 FEET  
1 MILE  
0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 FEET  
1 MILE



EXPLANATION

Crop line of the Pittsburgh coal



Extent of known deep mining



MAP RELIABILITY  
Coal crop line—very good  
Limits of known deep mining—approximate

SOURCES

Crop line compiled by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of deep mining from Pennsylvania Department of Environmental Resources, Bureau of Bituminous Mine Subsidence (1971), unpublished map.

U.S.G.S. AND 1960 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

59° 1' 13" 105° 1' 13" -3

CONTOUR INTERVAL 20 FEET  
Sea level = mean sea level

CROP LINE AND MINED-OUT AREA OF THE  
PITTSBURGH COAL

SMITHTON



EXPLANATION

Crop line of the Pittsburgh coal

—/—  
1000

Structure contour  
Altitude of the base of the  
Pittsburgh coal in feet  
above mean sea level.



SOURCES

Crop line compiled by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940). *Geology and mineral resources of Fayette County, Pennsylvania*. Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Structure contours compiled by A. D. Glover (1976) from Hickok and Moyer (1940).

19° 45' N  
40° 15' S  
MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET

0 50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000 FEET

CONTOUR INTERVAL 20 FEET  
DATUM: 5 MEAN SEA LEVEL

PENNSYLVANIA  
GEOL. SURVEY  
MAP

SMITHTON

COAL CROP LINE AND  
STRUCTURE CONTOURS



EXPLANATION

Crop line of the Clarion coal

Extent of known strip mining



MAP RELIABILITY

Coal crop line - fair  
Limits of known strip mining - approximate

SOURCES

Crop line modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map and on field checking

Limit of strip mining based on interpretation of topographic map and on field checking

CROP LINE AND MINED-OUT AREAS OF THE  
CLARION COAL

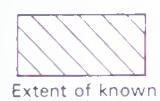
SOUTH  
CONNELLSVILLE



EXPLANATION



Crop line of the  
Upper Kittanning  
coal



Extent of known  
strip mining



CROP LINE AND MINED-OUT AREAS OF THE  
UPPER KITTANNING COAL

SOUTH  
CONNELLSVILLE



EXPLANATION

Crop line of the Lower Freeport coal



Extent of known deep mining



MAP RELIABILITY

Coal crop line—fair to good  
Limits of known deep mining—approximate

SOURCES

Crop line modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940). *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.  
Limits of deep mining from unpublished mine maps.

UTM GRID AND 1973 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

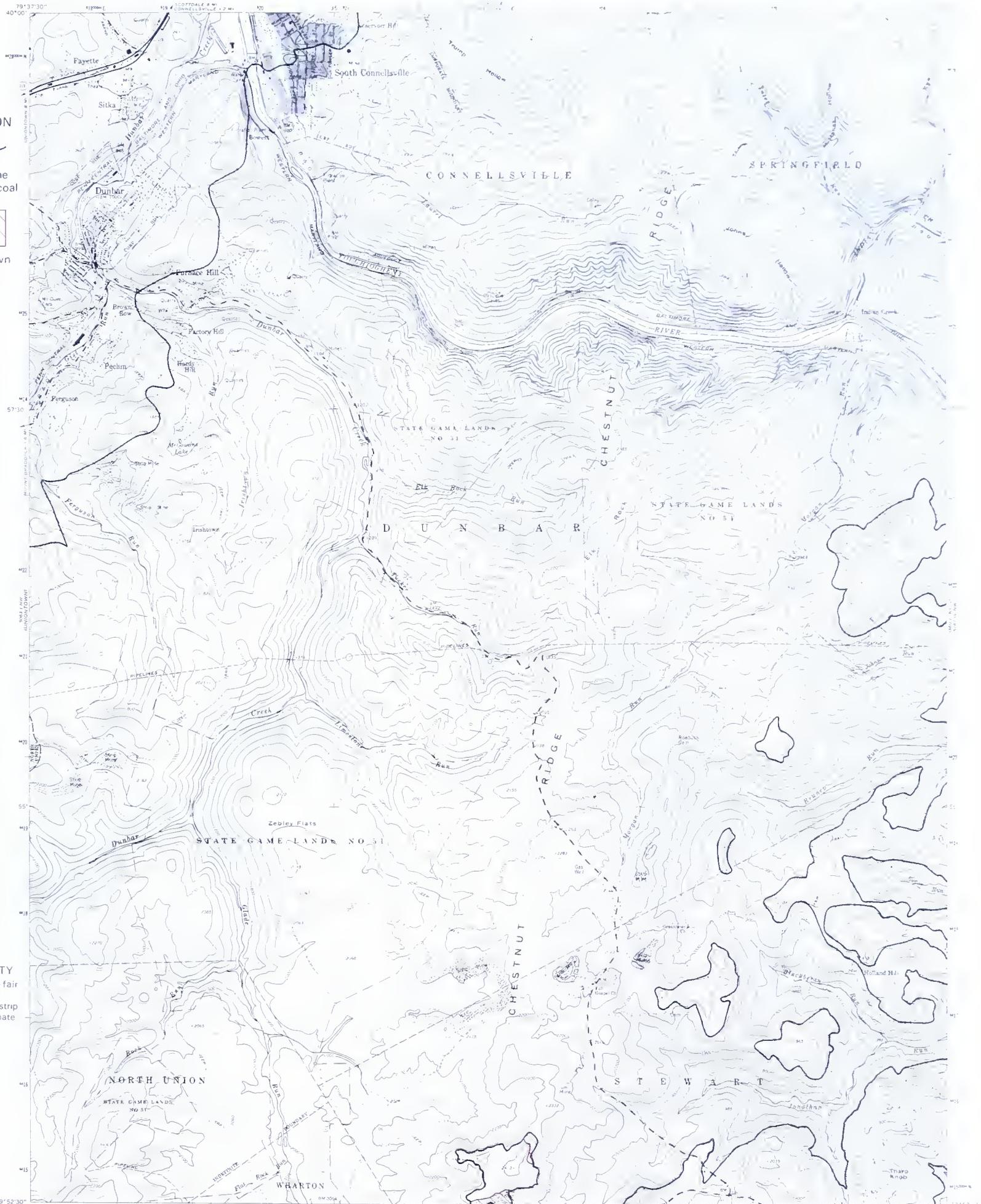
1000 0 1000 2000  
FEET METERS  
EASTING  
NORTHING  
1000 0 1000 2000  
FEET METERS  
EASTING  
NORTHING

CONTOUR INTERVAL 20 FEET  
DATUM IS MEAN SEA LEVEL

CROP LINE AND MINED-OUT AREAS OF THE  
LOWER FREEPORT COAL

SOUTH  
CONNELLSVILLE





## EXPLANATION



Crop line of the  
Upper Freeport coal



Extent of known  
strip mining

## MAP RELIABILITY

Coal crop line—fair  
to good  
Limits of known strip  
mining—approximate

## SOURCES

Crop line modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map and on field checking.

107°13' 16°53'  
107°13' 16°53'  
U.M. GRID AND 1973 MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET

CONTOUR INTERVAL 20 FEET  
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION  
Highway  
Mile, m. 2.74  
U.S. Route

CROP LINE AND MINED-OUT AREAS OF THE  
UPPER FREEPORT COAL

SOUTH  
CONNELLSVILLE

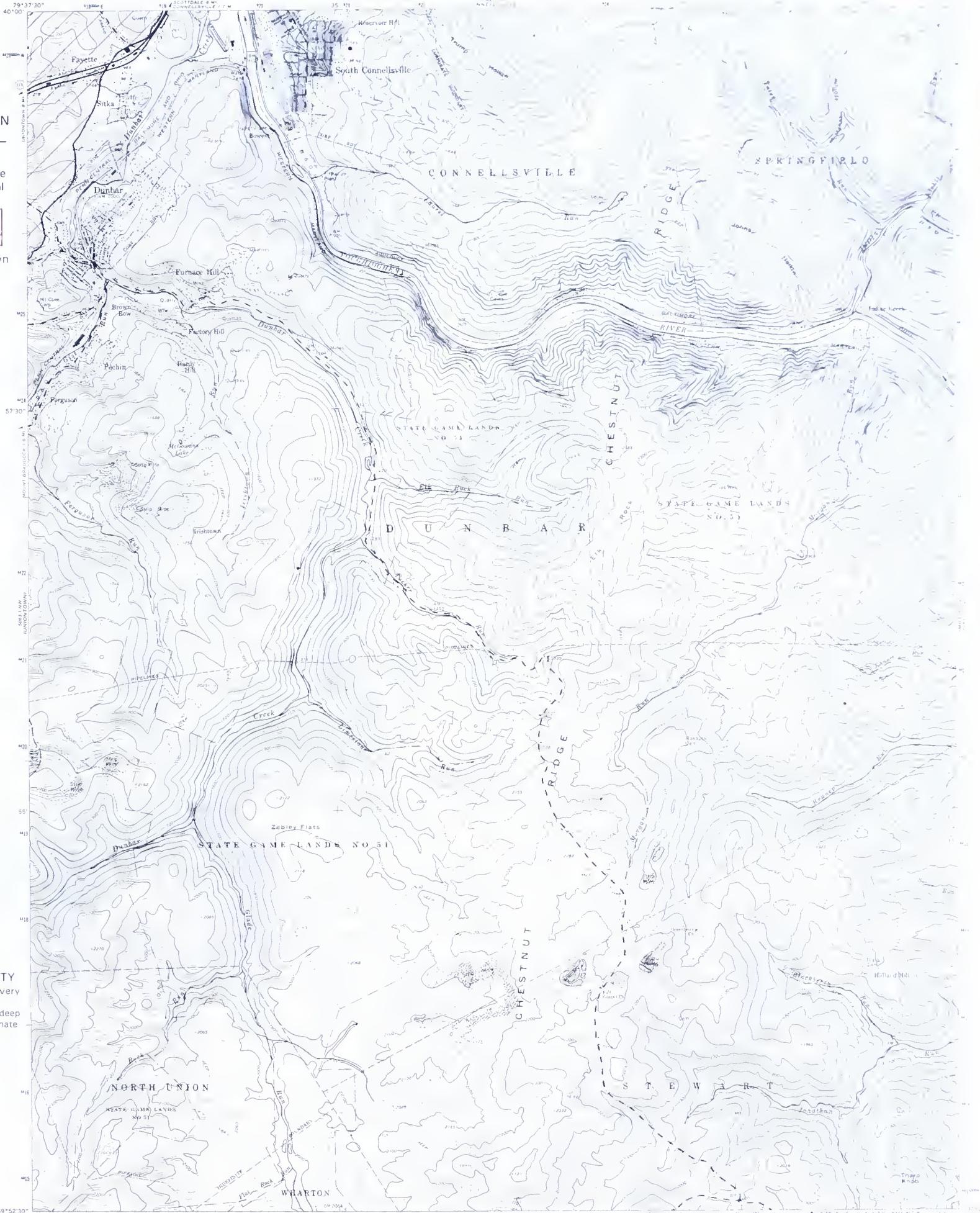


## EXPLANATION

## Crop line of the Pittsburgh coal



## Extent of known deep mining



## SOURCES

SOURCES  
Crop line compiled by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940). *Geology and mineral resources of Fayette County, Pennsylvania*. Pennsylvania Geological Survey, 4th ser., County Report 26. 530 p.

County Report 26, 530 p.  
Limits of deep mining from Pennsylvania Department of Environmental Resources, Bureau of Bituminous Mine Subsidence (1971), unpublished map.

CONTOUR INTERVAL 20 FEET  
DATUM IS MEAN SEA LEVEL

CROP LINE AND MINED-OUT AREA OF THE  
**PITTSBURGH COAL**

## SOUTH CONNELLSVILLE



EXPLANATION

CROP LINES

p Pittsburgh coal

uf Upper Freeport coal

lf Lower Freeport coal

uk Upper Kittanning coal

mk Middle Kittanning coal

lk Lower Kittanning coal

cl Clarion coal

Anticline Showing axial-plane trace and direction of plunge.

Syncline Showing axial-plane trace and direction of plunge.

-1000 P- Base of Pittsburgh coal

-1000 UF- Top of Upper Freeport coal

Structure contours

Altitudes in feet above mean sea level. Contour interval 100 feet.

MAP RELIABILITY

Coal crop lines—fair to very good

Structure contours—fair to very good



SOURCES

Crop lines modified by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Structure contours on top of Upper Freeport coal compiled by J. R. Shaulis from unpublished data; minor reference to Hickok and Moyer (1940) and unpublished map by W. E. Edmunds (1976). Structure contours on base of Pittsburgh coal compiled by A. D. Glover (1976) from Hickok and Moyer (1940).

UTM GRID AND 1973 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET  
100000 105000 110000  
400000 405000 410000  
100000 105000 110000  
400000 405000 410000

CONTOUR INTERVAL 20 FEET  
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION  
Heavy duty  
Medium duty  
Light duty  
Unimproved dirt  
U.S. Route

## COAL CROP LINES AND STRUCTURE CONTOURS

**SOUTH CONNELLSVILLE**



EXPLANATION

Crop line of the Pittsburgh coal

Extent of known strip mining

Extent of known deep mining



MAP RELIABILITY

Coal crop line—very good  
Limits of known strip mining—approximate  
Limits of known deep mining—approximate

SOURCES

Crop line compiled by J. R. Shaulis from Hickok, W. O., IV, and Moyer, F. T. (1940), *Geology and mineral resources of Fayette County, Pennsylvania*, Pennsylvania Geological Survey, 4th ser., County Report 26, 530 p.

Limits of strip mining based on interpretation of topographic map.

Limits of deep mining from Pennsylvania Department of Environmental Resources, Bureau of Bituminous Mine Subsidence (1971), unpublished map.

UTM GRID AND 1972 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 FEET  
1 2 3 4 5 6 7 8 9 10 MILES  
1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 METERS

CONTOUR INTERVAL 20 FEET  
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION  
Heavy Duty  
Medium Duty  
Imperial Class  
Local Roads  
State Roads

PENNSYLVANIA  
WATERFALL LOCATION

UNIONTOWN

CROP LINE AND MINED-OUT AREAS OF THE  
PITTSBURGH COAL



EXPLANATION

Crop line of the Sewickley coal

Extent of known strip mining

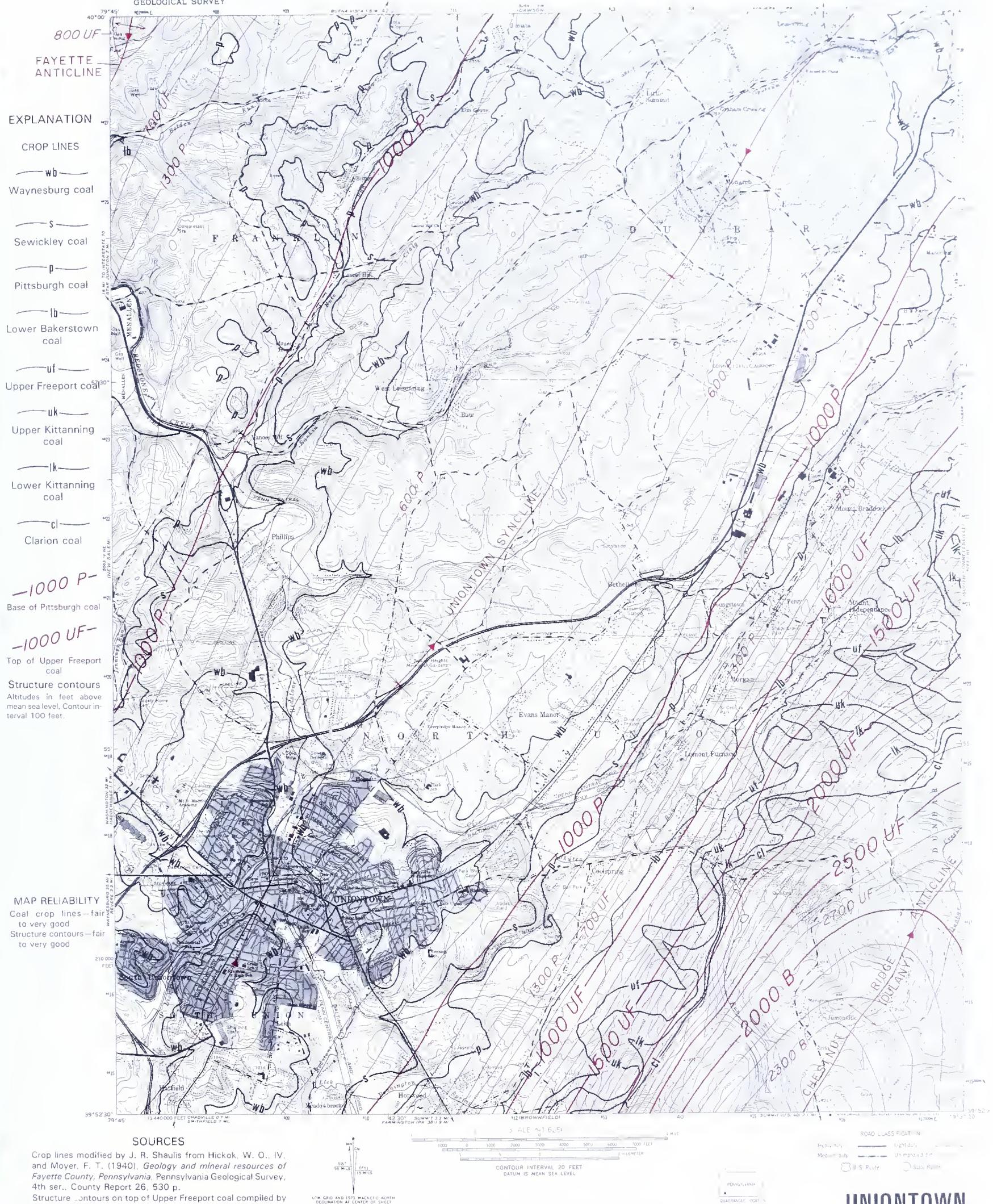
Extent of known deep mining



CROP LINE AND MINED-OUT AREAS OF THE  
SEWICKLEY COAL

UNIONTOWN





# COAL CROP LINES AND STRUCTURE CONTOURS

## UNIONTOWN









